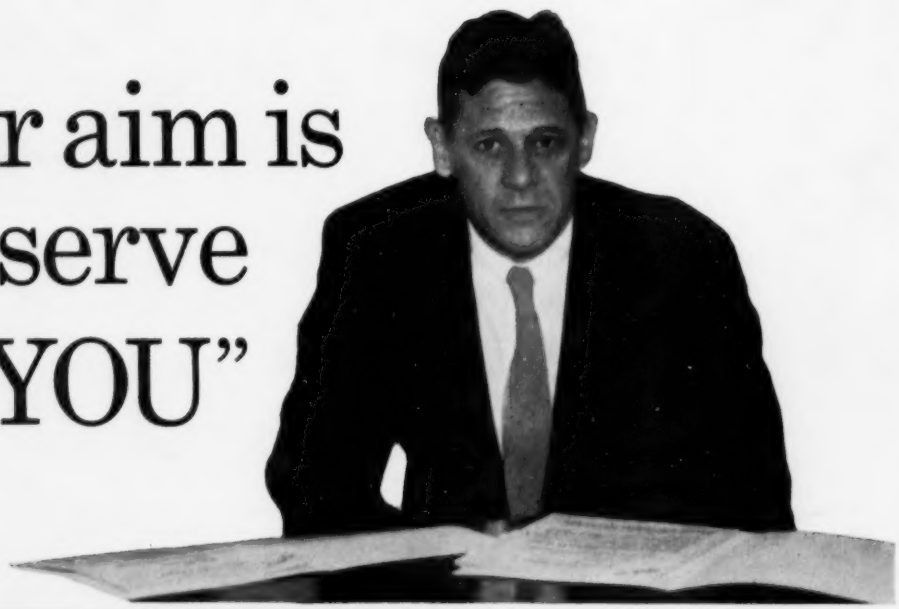
JULY, 1956

Commercial Fertilizer

and PLANT FOOD INDUSTRY

"Our aim is to serve YOU"



"The beginning of a new fertilizer year is a good time for the folks here at Nitrogen Division, Allied Chemical & Dye Corporation, to say *'Thank You!'* for past patronage...and to express a desire to continue to serve you with nitrogen materials adapted to your specific production programs.

"In addition to supplying the most complete line of nitrogen materials on the market, we work in other ways to assist the fertilizer industry. Here are some of the things we are doing:

"Nitrogen Division is continuing its powerful advertising campaign to encourage farmers to use more fertilizer to reduce crop production costs. Directed to the attention of 3½ MILLION readers of farm magazines, the theme of this campaign is: *Fertilizer Grows Farm Profits!* It helps sell your product to farmers.

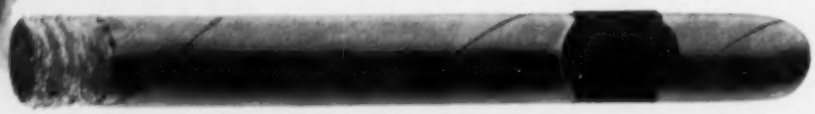
"The same Nitrogen Division research that originated Nitrogen Solutions continues to work towards better and lower cost forms of nitrogen to help you manufacture better fertilizers at a greater profit.

"Our technical men, skilled in ammoniation and other fertilizer production problems, are always ready to assist our customers. Techniques and knowledge gained in 27 years of Solutions experience are as near to you as your telephone. We are doing our best to help to make 1956-57 a better year for the fertilizer industry."

HUGO RIEMER, *President*

NITROGEN DIVISION Allied Chemical & Dye Corporation
40 Rector Street, New York 6, N. Y.

Cigars and Multiwall Bags



Kraft Bag Corporation, as a manufacturer of multiwall bags, is in the same position as the cigar manufacturer who complained that everything to be said about his 25c cigars had already been said about 5-centers!

...but there is no doubt about the quality of the multiwall bags that bear the Kraft Bag Corporation stamp!

Our completely integrated plants and modern facilities producing every type of heavy-duty valve or open mouth bag, are second to none!

As an exponent of true specialization, there isn't a single known or desirable time-and-labor-saving development that we haven't already either considered, initiated, adopted or built into multiwall bags we are called upon to make for America's industries, while continuing our search for still better ways to package our customers' products.

If your product can be packaged in a multiwall bag – you can depend on us to make the bag to fit your product.

Investigate **The KRAFTPACKER®** *Open Mouth Bag Filling Machine for free-flowing material ... highest accuracy and production ... reduces packaging costs at an unbelievable rate.*

KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary

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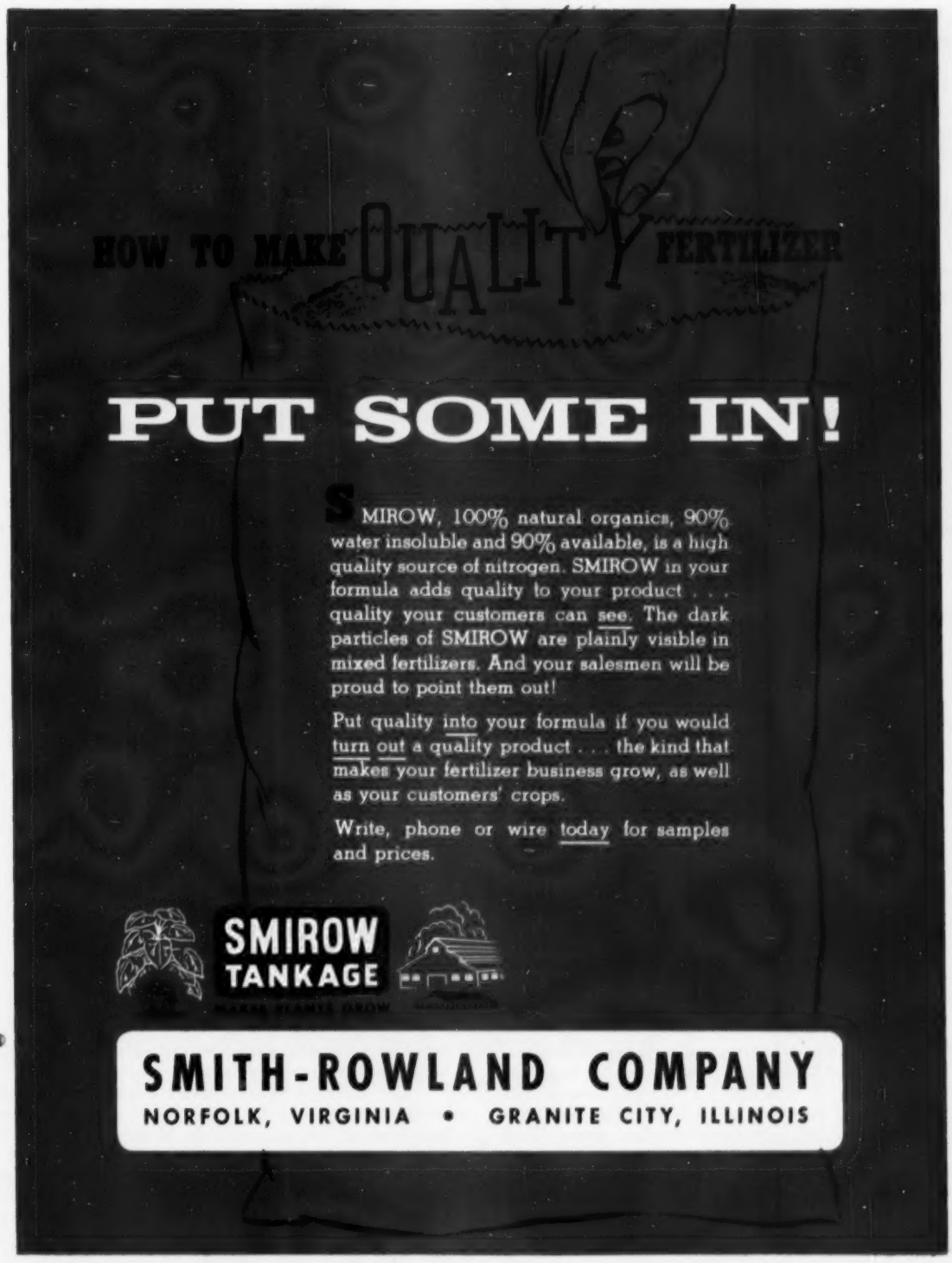
Daily News Bldg., Chicago 6, Ill.

Plants at St. Marys, Georgia and Gilman, Vermont


HOW TO MAKE QUALITY FERTILIZER
PUT SOME IN!
SMIROW, 100% natural organics, 90% water insoluble and 90% available, is a high quality source of nitrogen. SMIROW in your formula adds quality to your product . . . quality your customers can see. The dark particles of SMIROW are plainly visible in mixed fertilizers. And your salesmen will be proud to point them out!
Put quality into your formula if you would turn out a quality product . . . the kind that makes your fertilizer business grow, as well as your customers' crops.
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TANKAGE
SMITH-ROWLAND COMPANY
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Commercial Fertilizer

and PLANT FOOD INDUSTRY

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Commenting Freely

by Bruce Moran

Now that we have cried on each others shoulders, let's take a look around at what's really happening. According to the UN's FAO figures, world consumption of fertilizers has more than doubled since 1938 and US consumption has more than quadrupled. But . . . the highest consumption per acre is in New Zealand, with The Netherlands, Hawaii, Belgium and Japan next in rank. While our needs for food and fiber are not so pressing, still American ingenuity and salesmanship leave the field wide open for alert, aggressive producers.

Many fertilizer manufacturers are soil testing and producing data that will show farmers exactly what they need in the way of plant food. They are not crying. They are working at the development of sales ammunition with a sound, practical background that any farmer must recognize.

The current Government survey shows that business spending for new plant and equipment will rise by an annual rate of two billion in the third quarter; employment for May hit close to the all-time record high. Obviously business generally, which also looks to the farmer to buy its goods, has faith in the future, and is preparing for it.

And if you will follow our Around the Map department, and add up the millions going into new capacity reported there each month, you'll realize that part—at least—of our industry also has faith in the future, and is getting ready for it.

DEEP COST CUT IN FORMULATION OF GRANULAR FERTILIZER ANNOUNCED BY WEATHERLY!

We have completed successful operating tests of this technique, and are ready now to offer it in conjunction with the Weatherly Controlled-Granulation method. Full information on request.

Weatherly Controlled Granulation ***20-60 tons per hour***

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In just one year...

over ¼ million tons have switched

Round-the-clock production at Bonnie takes the push out of peak-season demands. Mammoth off-season storage capacity swallows up the seven-day-a-week production, stores it safely until you need it. And the industry's finest delivery schedules assure you high-quality triple when you need it.

International's natural curing helps you cut costs

• It's the natural curing process that gives you that "something-extra" quality of the triple super from Bonnie.

It helps you cut costs . . . gives you better control of manufacturing conditions and chemical reactions . . . stabilizes your formulation problems . . . and reduces the delivered unit cost of (P_2O_5). Here's what natural curing means to you:

Uniform particle size . . . for dependable ammoniation results.

Finer texture . . . for more complete ammoniation in every batch.

Stabilized product . . . for better chemical control.

Constant high analysis . . . with guaranteed minimum of 46% A.P.A.

Uniform high quality . . . for increased (P_2O_5) availability.

To guarantee this top quality triple from a plant as large as Bonnie required extra planning in plant design . . . extra capacity for a dependable supply . . . extra time to complete the five-week natural curing process . . . and extra care and quality control to assure uniform results in batch after batch.

This is the way Bonnie was built. And the results of the past year have proved Bonnie can deliver . . . Bonnie is dependable . . . and Bonnie can produce the kind of triple you want.

# of Triple Super Sales to Bonnie

The reason: *trustworthy service and delivery plus superior results with International's natural-cured triple*

Yes, in a single year, International has zoomed to a top position as a supplier in the triple super industry. Here's why, in the actual words of Bonnie customers:*

Others have recommended you

"Several nitrogen producers have recommended your product to us because of its excellent ammoniation. They were right."

Missouri

You live up to delivery promises

"What we like about doing business with International is your service, particularly regarding delivery. Our material has always been shipped when requested."

Indiana

Your triple stores better

"Last September, we stored some of your triple next to competitive materials from two other suppliers. Six months later, the other two piles were set up hard enough to be blasted. Any lumps in your product could be broken with your fingers."

Minnesota

Your triple is a better product

"This is the best triple we have ever used for ammoniation."

Ontario

We get better ammoniation results

"We can put 600 lbs. of Urana 10 in with 1,400 lbs. of triple."

New York

Your Triple holds more nitrogen

"We have been amazed with the results. With a very high humidity we have been using 500 lbs. of nitrogen solution with 1,400 lbs. of your triple. Never before have we been able to get over 360 lbs. of this solution in the mix."

Maine

We save money with your triple

"We like the constant high analysis of your product. It aids us in formulation and reduces the unit delivered cost."

North Dakota

You meet delivery schedules

"We certainly appreciate the way International came through on schedule during the rush season."

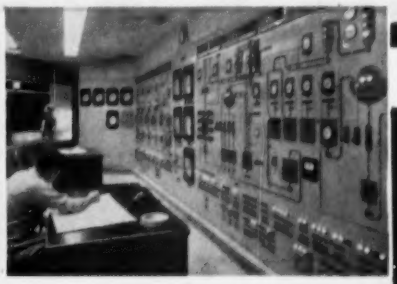
Arkansas

**names on request*

These are just a few of the reasons why this year, the big switch in triple super sales is to Bonnie — giant production facilities . . . prompt delivery . . . superior quality . . . and outstanding ammoniation results.

So this year, for a better product, and service you can depend upon, look to International Minerals & Chemical Corporation. You'll be glad you did.

This 85,000-ton curing unit — as big as two, full-sized football fields — is one example of the time and big capacity needed to produce natural-cured triple.



These "doodads" and dials get results . . . guard the uniformity and quality of every batch of triple super from Bonnie . . . help assure you of top results in ammoniation.

MINERALS International CHEMICALS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

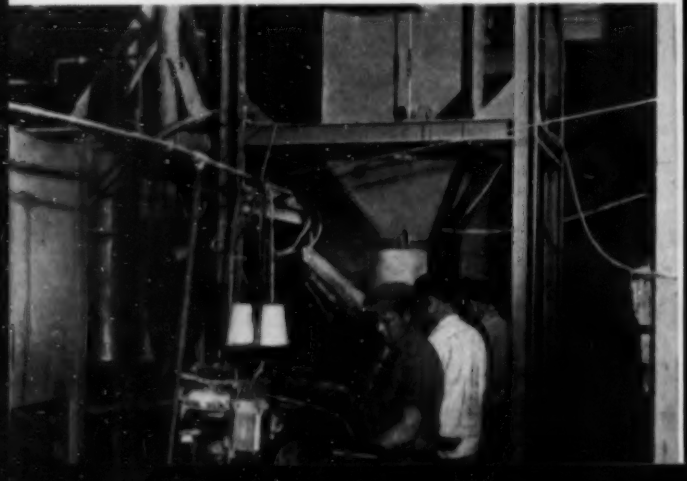
Phosphate Chemicals Division • General Offices: 20 North Wacker Drive, Chicago 6

The Man from

takes steps to lower your packing costs

STEP 1 AUTOMATIC BAGGING SCALE THAT SPEEDS WEIGHING

You'll like the St. Regis 135 AS Model F automatic bagging scale because it operates on a pace-setting basis, giving you the high output needed in the short shipping season. This St. Regis scale gives you accurate weights within 5 oz. on 95% of all bags packed. Its single-bucket design means quick clean-out, fast weight adjustment, minimum downtime for grade changes.



STEP 2 NEW PASTED VALVE BAG FOR FERTILIZERS

Have you seen the new St. Regis Pasted Valve Bag? It's going over big with packers of granular fertilizers. It has a new insert sleeve that closes securely against the squared bag top . . . and that means less siftage, cleaner packages, far less waste. You'll like the way the squared bag top gives you more room for your brand imprint and instructions. It makes for better stacking and loading, too.

St. Regis

whether you use open mouth or valve bags

STEP 3 **YOU TAKE THIS STEP**

For more information about the 135 AS Model F Scale or the St. Regis Pasted Valve Bag . . . or other St. Regis developments such as LUSTERGRIP (anti-skid for bags), STRUCTURAL STRIP, Rayon Thread. Fill in the coupon and the Man from St. Regis (and the scores of packaging experts who back him up) will be at your service.

Multiwall Packaging Division
St. Regis Paper Company, Dept. CF-756
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Please send more information about ____ 135 AS Model F Scale
____ Pasted Valve Bag

Name _____ **Title** _____

Firm _____

Address _____

City _____ **State** _____

Behind the Man from St. Regis stand experts in every field of packaging, ready to serve you.

ST. REGIS PAPER COMPANY

JUST AROUND THE CORNER *by Vernon Mount*

IKE'S HEALTH is naturally a political football, with the one side hoping he will not run, and the other side wanting . . . needing . . . him. The net truth seems to be that a man so recently out of bed with a heart condition who can stand a major abdominal operation and come up smiling, is a pretty rugged individual . . . especially at the age of 65.

TWO DAYS after surgery, the President was back at the helm of the Government—making decisions, signing documents; three days later even entertaining the head of a foreign State—Chancellor Adenauer of Germany. These are not things a sick man can do.

IKE WILL RUN, in my opinion. What this will mean to the Democrats is interesting. They have a health issue that can be used, if done deftly. They can ask if the people are willing to "risk" electing Nixon. But they in turn run the risk of antagonizing that basic American instinct, which rises in wrath to protect a man who's being kicked when he's down.

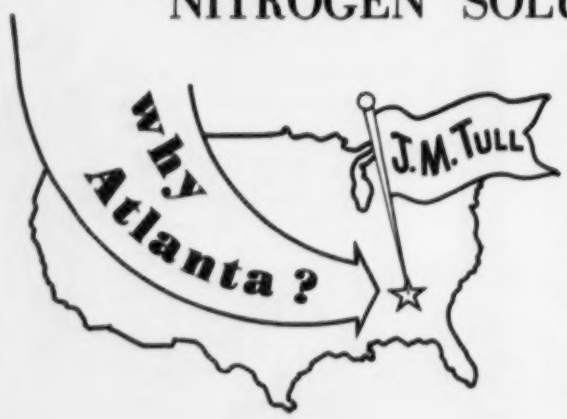
SO, I reiterate my prediction of months ago that Ike will run, will be elected.

Yours faithfully

Vernon Mount

Call TULL in ATLANTA when installing or repairing a

NITROGEN SOLUTION SYSTEM



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SEND FOR YOUR BOOKLET, "The Installation and Operation of a Nitrogen Solution System." to P. O. Box 4628, Atlanta 2, Ga.

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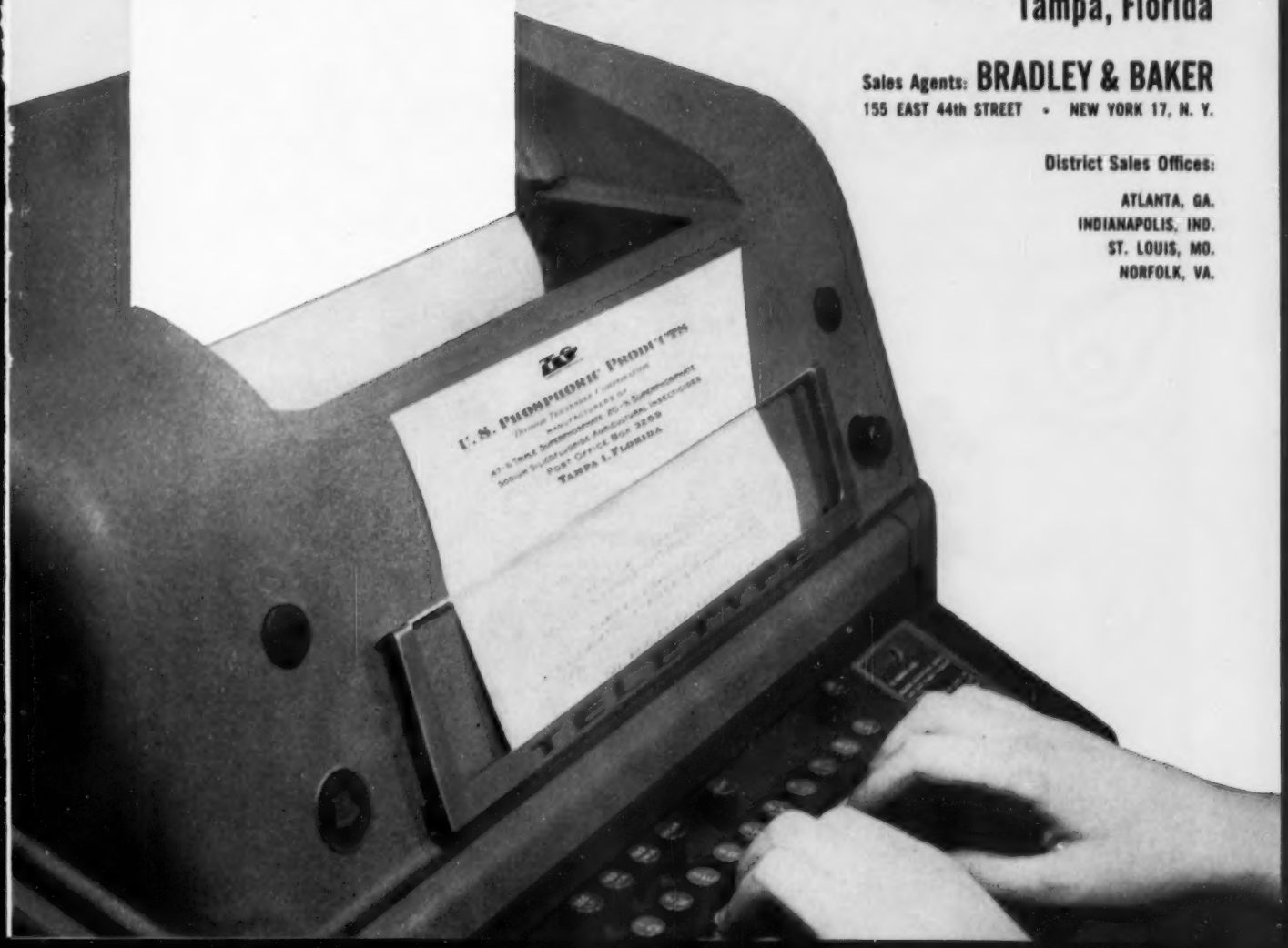

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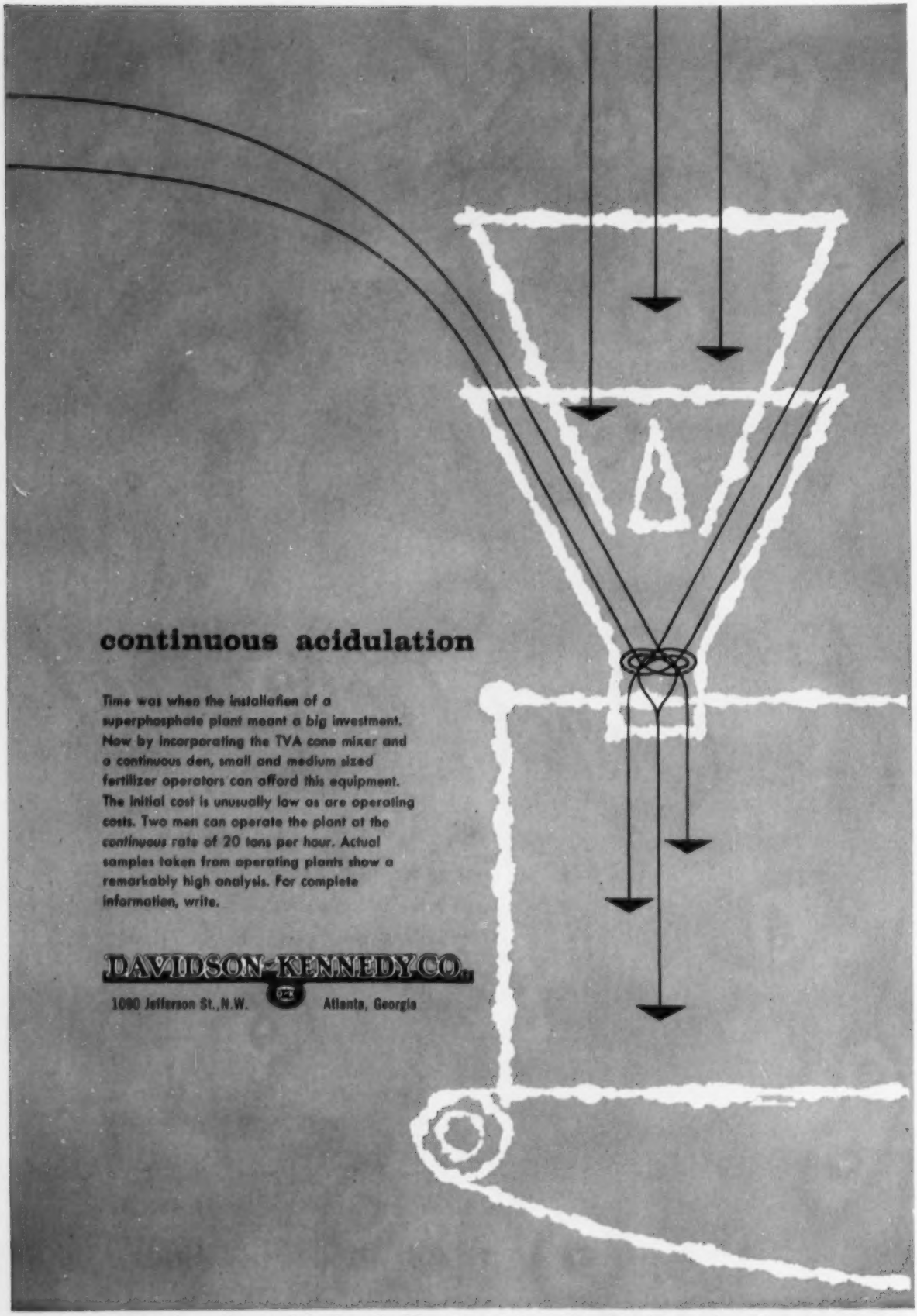
continuous acidulation
Time was when the installation of a superphosphate plant meant a big investment. Now by incorporating the TVA cone mixer and a continuous den, small and medium sized fertilizer operators can afford this equipment. The initial cost is unusually low as are operating costs. Two men can operate the plant at the continuous rate of 20 tons per hour. Actual samples taken from operating plants show a remarkably high analysis. For complete information, write.
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DON'T SIGN THAT ORDER!

SAVE MONEY ON 1956 NITROGEN CONTRACTS

Freight represents a high percentage of your costs for nitrogen solutions, anhydrous ammonia and aqua ammonia. The completion of Sinclair's strategically located new plant in Hammond, Indiana, means a sharp reduction in freight costs for many nitrogen users located in the Mid-West.

Here's another big advantage! Sinclair's new facilities and vast new storage capacity make it possible to meet *your* production schedule – even during peak season. Two tank car fleets are held in readiness – one for exclusive use in shipping anhydrous ammonia, the other for nitrogen solutions.

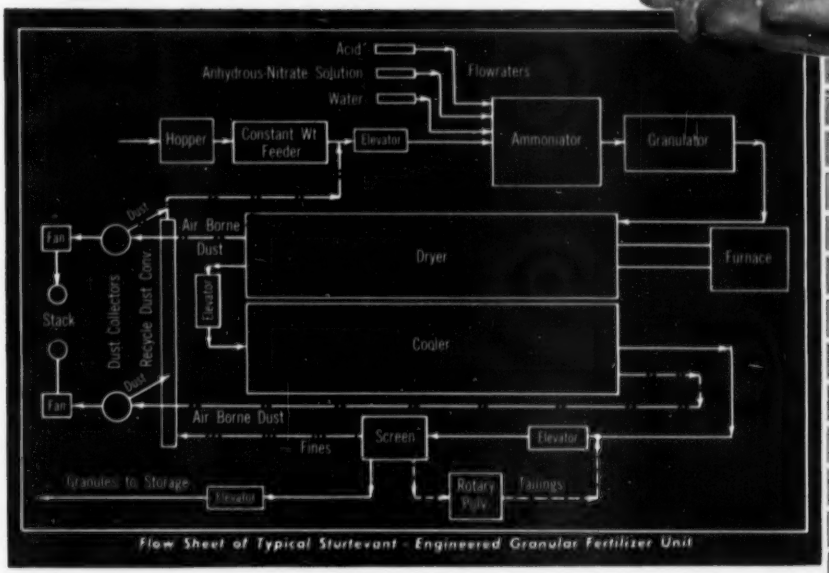
So don't sign that contract... first find out how this new Sinclair plant in the heart of the Mid-West can cut your costs and delivery time of nitrogen supplies. Write or telephone...

SINCLAIR CHEMICALS, INC.

(Affiliate of Sinclair Refining Company)

600 Fifth Avenue, New York 20, N. Y. – Phone Circle 6-3600
155 North Wacker Drive, Chicago 6, Illinois – Phone Financial 6-5900

Granular Fertilizer Can Be in Your Future, too!



Flow Sheet of Typical Sturtevant - Engineered Granular Fertilizer Unit

LET STURTEVANT ENGINEERING AND EQUIPMENT MAKE THIS YOUR GRANULAR FERTILIZER UNIT

If you operate a mixing plant, there's a granulator in your future. The signs are unmistakable. Granular fertilizer is replacing its powdered cousin faster than modern processors can keep up with the demand.

Take the case of Canada Packers, Limited, of St. John, New Brunswick. Fourteen months after Sturtevant engineers assisted in adapting this customer's plant to a granular product, the balance of orders had shifted to 70% granular against 30% powder — *and management expects in a very short time (perhaps as you read this) that shipments will be 100% granular.*

Of course, we at Sturtevant Mill Co. are not market authorities, although we do believe this experience by Canada Packers, Limited is significant.

Our business is to assist you with the designing and engineering of the best possible granular fertilizer unit for your needs — also super phosphate units and conventional mixing units, according to your requirements.

Serving the fertilizer industry has been our business since 1873 . . . which is why you won't get rash promises or rush engineering when you come to Sturtevant. You will get a unit that will produce *what* it's supposed to *when* it's supposed to.

Why not let Sturtevant help you to spell out *your* future in granular fertilizers by writing today? Use the convenient coupon on the right.

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Dry Processing Equipment

The "OPEN DOOR" to *lower* operating costs over *more* years

PULVERIZERS • CRUSHERS • MICRON-GRINDERS • GRANULATORS • SEPARATORS
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Desired capacity is_____

Name_____ Title_____

Firm_____

Street_____

City_____ Zone_____ State_____

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OLD soils need NEW life!

revitalize them with - THE IRON CHELATE

PERMA GREEN IRON 135

for BIGGER, BETTER and FASTER-GROWING CROPS

UNTREATED

TREATED

ORANGES

Four ounces to one pound PERMA GREEN IRON 135 per tree produces dark green leaves and more, larger and better colored oranges.

When iron is lacking and plant leaves turn yellow, PERMA GREEN IRON 135 makes them dark green in two weeks' time.

PERMA GREEN IRON 135 is an organic chelate that moves upward with the sap to rejuvenate the entire plant.

PERMA GREEN IRON 135 *now produces* –

– healthier and more productive blueberry bushes
– larger and more beautiful roses
– deeper-green leaves on azaleas and rhododendrons
– more attractive ornamental trees and shrubs.
– more nutritious vegetables
– more and juicier oranges and grapefruit
– more and larger nuts

Write for detailed information on PERMA GREEN IRON 135 for plants and reprint of scientific article on CHELATES.

Developed by RESEARCH • Proved by PERFORMANCE

for quality products, remember –

Refined PRODUCTS CORPORATION

Manufacturing Chem'sts • 632 Schuyler Ave. • Lyndhurst, N. J.

SUNFLOWERS

Grown in nutrient solution. Small yellow plant at left treated with iron sulphate.

Large dark green plant at right treated with PERMA GREEN IRON 135.

GARDENIAS (Greenhouse)

Iron is very important for gardenias. Treat each bush with 1/16 to 1/2 level tablespoonful PERMA GREEN IRON 135 to insure dark green leaves and large pure white flowers.

SUPPLEMENTAL REPORT

1955-56 FERTILIZER SITUATION

A. L. Mehring and C. A. Graham
Commodity Stabilization Service, Food and Materials Requirements Div., U. S. Department of Agriculture, Washington, D. C.

This report supplements fertilizer supply estimates for 1955-56 issued in September 1955.

The 1955-56 fertilizer season started briskly. Up to January 1 the tonnage of fertilizer shipped was about two percent more than in the like period a year earlier. Since the first of the year, however, fertilizer movement is reported by the trade to have been the poorest in years. Extremely dry weather in the West Central States, a long cold winter in the East, and uncertainty about farm legislation are thought to be mainly responsible. A considerable part of the tonnage lost presumably will be made up in April and May, although most industry leaders feel that tonnages for the year as a whole may be five percent lower than for the previous year.

The Census of Agriculture recently published gives tonnages and values of fertilizers used in every county in the United States in 1954. It also gives for the first time the quantities used on each of the principal crops and acreages fertilized.

A rapid increase in recent years of fertilizer requirements for non-farm purposes, such as highways, parks, lawns and home gardens, is revealed by an analysis, which was published in the February 1956 issue of "Better Crops with Plant Food," of data from the Census of Agriculture and other fertilizer statistics. It was estimated that in 1954 nine percent of fertilizer usage was non-farm.

Nutrients

Movement of plant nutrients will probably approximate that in 1954-55, even though less tonnages of fertilizer are moved. Usage continues toward more concentrated materials and mixtures. A recent freight increase of six percent will probably accentuate this trend.

Nitrogen

A survey made by the Chemical and Rubber Division, Business and Defense Services Administration, Department of Commerce, and published since our last report, indicates that the annual capacity to produce synthetic ammonia was equivalent to 3,353,000 tons of nitrogen on January 1, 1956. Other plants that came on stream since then, or that are scheduled for completion this year, should bring the productive capacity above 3,900,000 tons on January 1, 1957. Actual production of synthetic ammonia during the calendar year 1955 was equivalent to 2,601,918 tons of nitrogen.

Stocks of nitrogen in the hands of producers, manufacturers of mixed fertilizers, and distributors have increased during this season. From 1949 until 1954, January peak-of-the-season stocks of nitrogen—including by-product material—in the hands of producers in the form of anhydrous and aqua ammonia, ammonium nitrate, ammonium sulfate and nitric acid varied from about 40,000 to around 80,000 tons. On January 31, 1956, however, stocks at manufacturing plants were equivalent to 289,400 tons of nitrogen in these forms. In former years these stocks decreased between February 1 and March 1 by about 15,000 tons of nitrogen, but in 1956 they increased 2,000 tons. It is not known how much is in the hands of fertilizer mixers or retail distributors, with the exception of anhydrous ammonia distributors and applicators. It is thought that the latter on January 31, 1956 had at least 150,000 tons of nitrogen in their tanks.

Table 1. — NITROGEN: Revised estimates[1] of 1955-56 supply for fertilizer purposes, United States and possessions.

(In short tons of nitrogen)

Item	Ammonium Nitrate[2]	Ammonium Sulfate & Ammonium Sulfate Nitrate	Urea	Other Solids[3]	Natural Organics	Compound Solutions[4] For ammoniation	Compound Solutions[4] Direct application	Ammonia[5] For ammoniation	Ammonia[5] Direct application	Totals
U. S. Production										
Synthetic ammonia	420,000	245,000	50,000	96,000	.....	470,000	75,000	190,000	460,000	2,006,000
By-product ammonia	.....	203,000[6]	.....	.....	.....	.....	.....	2,000	.....	205,000
Natural organics	.....	.....	.....	.....	30,000	.....	.....	.....	.....	30,000
Total	420,000	448,000	50,000	96,000	30,000	470,000	75,000	192,000	460,000	2,241,000
Exports[7]	29,000	136,000	5,000	21,000	1,000	40,000	.....	7,000	.....	239,000
Supply from domestic sources	391,000	312,000	45,000	75,000	29,000	430,000	75,000	185,000	460,000	2,002,000
Imports[7]	80,000	40,000	23,000	150,000	4,000	.....	.....	4,000	.....	301,000
Total Supply	471,000	352,000	68,000	225,000	33,000	430,000	75,000	189,000	460,000	2,303,000
Percent change of September, 1955 estimate										— 2.0
Percent change from 1954-55 supply										+ 2.3

[1]Based on actual production during eight months, exports and imports for the first seven months, and on rates of production and similar information for the rest of the period.
[2]Includes mixtures with limestone.
[3]Includes estimated ammonium phosphates, sodium nitrate, calcium nitrate, cyanamid and nitraphosphates.
[4]Includes ammonium nitrate, ammonia-ammonium nitrate and ammonia-urea solutions in water.
[5]Includes aqua ammonia.
[6]Includes ammonium phosphate produced from by-product ammonia.
[7]Includes the estimated nitrogen content of imported and exported mixed fertilizers and ammoniated superphosphate.

Table 2.—PHOSPHORUS: Revised estimates of 1955-56 supply for fertilizer purposes, United States and possessions.

(In short tons of available phosphoric oxide, P_2O_5)

Item	Normal superphosphate[1]	Enriched superphosphate	Concentrated superphosphate	Other[2]	Total
U. S. Production	1,557,000	35,000	690,000	200,000	2,482,000
Exports[3]	90,000	-----	65,000	25,000	180,000
Supply from domestic sources	1,467,000	35,000	625,000	175,000	2,302,000
Imports[3]	1,000	-----	1,000	55,000	57,000
Total Supply	1,468,000	35,000	626,000	230,000	2,359,000
Percent change of September, 1955 estimate					+ 2.6
Percent change from 1954-55 supply					+ 2.0

[1]Includes wet-mixed base goods.

[2]Includes ammonium phosphates, basic slag, fused rock phosphate, liquid phosphoric acid, dicalcium phosphate, high-grade residue, natural organics, and other sources of available P_2O_5.

[3]Includes the P_2O_5 content of mixed fertilizers and ammoniated superphosphate.

Table 3.—POTASSIUM: Revised estimates[1] of 1955-56 supply for fertilizer purposes, United States and possessions.

(In short tons of potassium oxide, K_2O)

Item	Potassium chloride	Potassium sulfate and sulfate of potash-magnesia	Manure salts	All other materials[2]	Totals
Deliveries from domestic sources	1,773,000	113,000	1,000	26,000	1,913,000
Exports[3]	119,000	13,000	-----	1,000	133,000
Supply from domestic sources	1,654,000	100,000	1,000	25,000	1,780,000
Imports[3]	126,000	18,000	-----	7,000	151,000
Total Supply	1,780,000	118,000	1,000	32,000	1,931,000
Percent change of September, 1955 estimate					— 0.4
Percent change from 1954-55 supply					+ 3.5

[1]Estimated on the basis of actual exports, imports and deliveries up to March 1, 1956 and present prospects for the rest of the season rather than the quantities above ground at the mines, or obtainable by import.

[2]Includes potassium nitrate, potassium carbonate, potash-lime, nitrate of soda-potash, and natural organics.

[3]Includes the potash content of mixed fertilizers.

The supply of fertilizer nitrogen for the year ending June 30, 1956 is currently estimated to be 2,303,000 tons or 2.3 percent more than the 1954-55 supply (table 1). Production, as shown in the first line in the table, includes carryover of the previous year's production in excess of normal working stocks. Production of ammonium sulfate, both synthetic and by-product, has increased more rapidly than was expected. The manufacture of other nitrogenous materials has proceeded approximately according to schedule. If present prospects are fulfilled, total production of nitrogen for the season will exceed that for 1954-55 by seven percent. When excess carryover from the previous year is added this figure becomes 12 percent.

Present estimates of the exports of ammonium nitrate and ammonium sulfate are substantially higher than the September estimates, which were above those for the previous year.

Imports have decreased even more than predicted. It now appears that over 100,000 tons less nitrogen will be imported than in the year ended June 30, 1955.

Phosphorus

From data given in table 2, the supply of available P_2O_5 for 1955-56 appears to be about 2.6 percent more than was expected last September. Supplies of all types of available phosphates are ample for the immediate future.

The largest difference from the previous year shown in the table is in the production of concentrated superphosphate, which increased even more than predicted.

Exports of phosphates increased, but somewhat less than expected. Imports of ammonium phosphates were very high in the spring of 1955, but have decreased substantially since then. This is reflected in the lower estimate for other phosphorus. Stocks in the hands of primary producers, exclusive of superphosphate in base and mixed goods, were equivalent to 415,381 tons of available P_2O_5 on March 1, 1956. This is approximately 13 percent more than on the same date a year earlier.

Potash

Potash deliveries for the first eight months of the present fiscal year indicate that the September estimates were nearly correct for each type of potash fertilizer with the exception of the sulfates. Production of the latter increased, but deliveries are not up to expectations. For the details see table 3.

Exports of potash increased substantially, but not as much as forecast. Imports of chloride increased, and of sulfate decreased. The net effect of these changes is to raise indicated supplied 3.5 percent over the preceding fiscal year.

A report based on trade deliveries of nitrogen, phosphates and potash during 1955-56, and a forecast of supplies for 1956-57, is scheduled to be issued after the close of the current season.

As part of the program to develop leadership in the field of agricultural education, National Plant Food Institute annually sponsors Agronomy Achievement Awards for young men majoring in either crops or soils who show leadership potential. The latest to be thus honored is this group from North Carolina State's student agronomy club. Shown are: Dr. J. W. Fitts, NC State; Tully Baxter Williams, a junior, winner of the 1956 award; Dr. Willard H. Garman, NPFI chief agronomist; Dr. Paul Harvey, NC State. In addition to the honor, young Williams got a check for $200 to be applied on next year's tuition.

LOOK TO NATIONAL POTASH FOR QUALITY AND SERVICE

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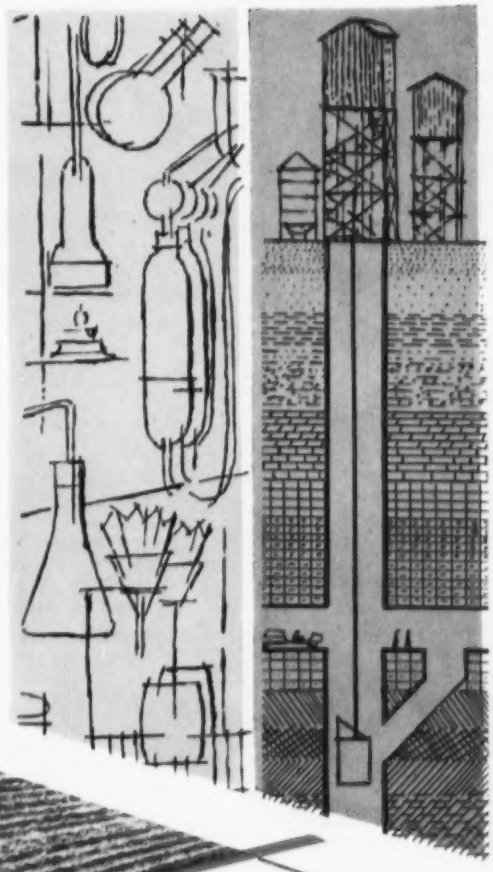

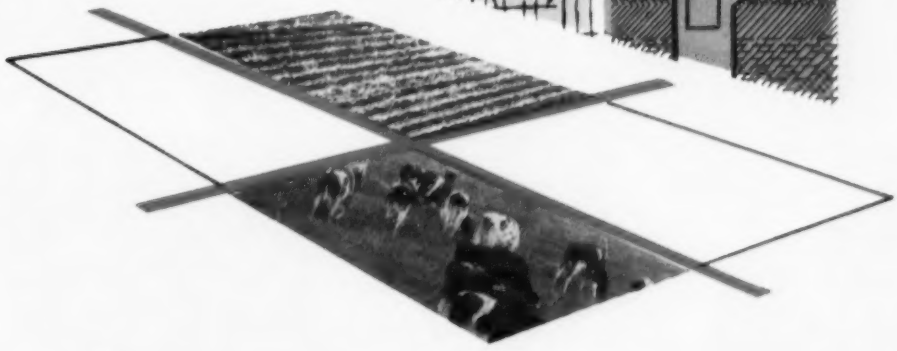

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1200 attend as

INSTITUTE MEETS FOR FIRST TIME

White Sulphur Springs, W. Va., was bulging at the seams June 10-13 as some 1200 representatives of the fertilizer industry thronged about the Greenbrier Hotel for the first annual meeting of the National Plant Food Institute.

A well-balanced schedule of work and play kept things moving along at a steady pace. Sunday, June 10, was given over to registration, a Ladies' Garden Party, board and committee meetings, and to renewing friendships.

Monday brought a forenoon General Session and an afternoon devoted to sports activities for the men, and bridge and canasta for the ladies. The nitrogen producers entertained at a hospitality hour that evening, and after dinner the auditorium was open for dancing.

Another General Session followed Tuesday morning, and the afternoon was again left open for outdoor and indoor activity. The potash producers played host at hospitality hour preceding the annual banquet Tuesday evening. Once again the auditorium was set up for dancing after the banquet.

Wednesday's schedule included only a meeting of the new Board of Directors, but lobby and sitting rooms were still crowded with little groups getting in a final personal visit or perhaps talking a little business.

The initial business session on Monday opened with Board Chairman Ed Geoghegan (Southern Cotton Oil Co., New Orleans) at the helm in place of NPFI President Joe Howell (Virginia-Carolina Chemical Corp., Richmond), who was unable to attend the convention due to the current pressure of company business. In his absence Ralph Douglass (Smith-Douglass Co., Norfolk) read the president's message for him. His message reviewed some of the problems of the year since the merger of NFA and APFC took place, and outlined the progress made as a unified team. He called attention to the job ahead and to the opportunity this job holds. "Let us be realistic in recognizing that our National Plant Food Institute, representing a sizable segment of our industry, is given more opportunities, more assignments, and greater challenges as one organization, than when we had two trade associations. The creation of the Institute has provided us a more efficient vehicle for working with other organizations in fostering a sound land management program in which plant foods play a vital role."

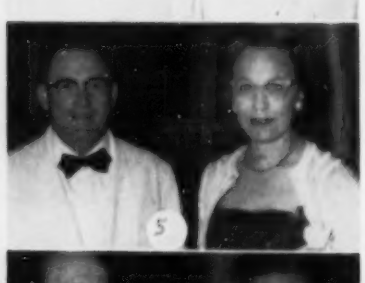
Following this message, the Board of Directors presented a unanimous resolution commending Mr. Howell for his forceful leadership and unfailing efforts during this period of organization and initial operation.

Next on the podium was Dr. Russell Coleman, executive vice president of the Institute, who narrated a visual presentation of the accomplishments of "One Year of Service." He called attention to the task of

Key to CF Staff Photos

1. Dave Weatherly and Harold Kitchens, both with D. M. Weatherly Co., Atlanta.
2. Mr. and Mrs. L. G. Black, Ark-Mo Plant Food Co., Corning, Ark., Mr. & Mrs. Joe Culpepper, Spencer Chemical Co., Kansas City.
3. George Urbanis, Clair Dyer and Len Gopp, all with International Minerals & Chemical Corp., Chicago.
4. B. F. Sutherland, Armour Fert. Wks., Atlanta, G. W. Nooe, Ohio Valley Fertilizer Corp., Maysville, Ky.
5. J. S. Whittington, Olin Mathieson Chemical Corp., Baltimore, Jack Criswell, Agricultural Ammonia Institute, Memphis.
6. Dallas Cantwell, Southern Nitrogen Co., Savannah, W. D. Barton, Tennessee Corp., Atlanta.
7. R. S. Mueller, R. S. Mueller Co., B. H. Brewster, Jr., and Paul Prosser, Jr., both with The Baugh & Sons Co., all from Baltimore.
8. H. H. Tucker, Sohio Chemical Co., Lima, Tracy Adcock, Swift & Company, Chicago, C. E. Workman, Virginia-Carolina Chem. Corp., Richmond.
9. H. A. Parker, Howard Parker, Bill Nichols and James Purcell, all with Sylacauga Fertilizer Co., Sylacauga.
10. Mr. & Mrs. Jack Lindsey, International Minerals & Chemical Corp., Shreveport, Mr. & Mrs. Doyle Patterson, Farm Belt Fertilizer & Chemical Co., Kansas City.
11. L. W. Berry, Best Fertilizers, Oakland, Calif., H. E. Ferguson, Balfour, Guthrie & Co., San Francisco.
12. Marion Nabors, Ashcraft-Wilkinson Co., Tampa, R. W. Hackett, Melson Fertilizer Co., Georgetown, Tom Nixon Ashcraft-Wilkinson Co., Atlanta.
13. Mr. & Mrs. Ralph Fraser, Summers Fert. Co., Baltimore.
14. John R. "Dugan" Taylor, Grand River Chemical Co., Tulsa, Dr. H. H. Shepard, USDA, Washington.
15. Harvey Melson, Melson Fertilizer Co., Georgetown, A. A. Schultz, Reading Bone Fertilizer, Reading, Warren Huff, Ashcraft-Wilkinson Co., Atlanta.
16. John Foy, Ashcraft-Wilkinson Co., Atlanta, Mr. & Mrs. Ed Spidle, Capital Fertilizer Co., Montgomery.
17. Mr. & Mrs. R. E. Bennett, Farm Fertilizers, Omaha.
18. Mr. & Mrs. A. A. Schultz, Reading Bone Fertilizer Co., Reading.
19. W. T. Doyle, Sturtevant Mill Co., Boston, Mrs. Gordon Cunningham, Atlanta.
20. H. E. Wood, Farmers Fertilizer Co., Columbus, Harold Kitchens, D. M. Weatherly Co., Atlanta.
21. Jim Zwemer, Smith-Douglass Co., Inc., Norfolk, Mrs. R. M. Hopkins, Houston, Ralph Douglass Co., Inc., Norfolk, Mrs. J. H. Zwemer, Norfolk, R. M. Hopkins, San Jacinto Chemical Co., Houston.

1. Bill Ritnour, NPFI, Washington, Graham Campbell, Chamberlain & Barclay, Cranbury, N. J.
2. Mr. & Mrs. J. F. Reed, American Potash Institute, Atlanta.
3. Mr. & Mrs. C. L. Straughn, American Potash & Chemical Corp., Atlanta.
4. Mr. & Mrs. J. D. Stewart, Jr., Federal Chemical Co., Louisville.



Institute's Executive Committee

Members of NPFI's Executive committee, in addition to the officers, are:
E. A. Geoghegan, Southern Cotton Oil Co., New Orleans
W. E. Shelburne, Armour Fertilizer Works, Atlanta
John A. Miller, Price Chemical Co., Louisville
G. Fred Coope, Potash Co. of America, Carlsbad, N. M.
Hugo Riemer, Nitrogen Division, Allied Chemical & Dye Corp., New York
Marlin G. Geiger, Davison Chemical Co., Division of W. R. Grace & Co., Baltimore
J. H. Epting, Epting Distributing Co., Leesville, S. C.

New NPFI Directors

Thirteen new members of the Board of Directors of the National Plant Food Institute elected at the annual business session June 12 are:
W. G. Hewitt, Pacific Guano Co., Berkeley, Cal.
H. A. Parker, Sylacauga Fertilizer Co., Sylacauga, Ala.
Walter E. Meeken, Consolidated Rendering Co., Boston, Mass.
Frank S. Washburn, American Cyanamid Co., New York, N. Y.
S. M. Hackett, Dixie Fertilizer Co., Shreveport, La.
A. F. Reed, Lion Oil Co., Div. Monsanto Chemical Co., El Dorado, Ark.
L. Dudley George, Richmond Guano Co., Richmond, Va.
H. E. Wood, The Farmers Fertilizer Co., Columbus, Ohio
P. J. Gum, Ridge Fertilizer Co., Lake Wales, Fla.
B. W. Bellinger, Tennessee Corp., New York, N. Y.
Dean R. Gidney, United States Potash Co., New York, N. Y.
J. E. Nunnally, Cotton Producers Association, Atlanta, Ga.
G. F. Coope, Potash Co. of America, Carlsbad, N. M. (elected to fill unexpired term of George E. Petitt of the same company, deceased)

keeping an eye on some 15,000 legislative bills each year, so that the industry can be alerted to support the favorable and oppose the unfavorable. Some 15 national and 14 state bills during the past year were of direct concern to our industry, he pointed out. Regulations must also be watched, he reminded, as the freight rate case recently; in this instance opposition held down increases in rates on phosphates and potash and mixed fertilizers that would otherwise have cost the industry about $1.8 million a year. Dr. Coleman went on to outline the other services performed so well by the Institute during this interval.

"Who Influences the Farmer" was the question to which some answers were provided by Drs. J. M. Bohlen and G. M. Beal, associate professors of Rural Sociology at Iowa State College, Ames. Using a flannelboard to illustrate results of the studies they have analyzed, they showed the five separate steps that take place with each prospective user of a new practice, product or service; they further showed how information sources vary in importance as the farmer progresses from step to step.

KEY TO CF STAFF PHOTOS

1. Mr. & Mrs. Jim Totman, Summers Fertilizer Co., Baltimore.
2. John Mooar, Sturtevant Mill Co., Atlanta, Ray Cartledge, Cartledge Fertilizer Div., Wilson & Toomer, Cottondale.
3. Al Spillman, Coop. GLF Soil Bldg. Service, Baltimore, Bob Cocks, Farmers Coop. Fert. Purchasers, Kenbridge, Va.
4. Mr. & Mrs. W. D. Barton, Tennessee Corp., East Point, Ga.

Unnumbered picture: George Barley, Diamond R Fertilizer, Winter Garden, Fla.; Jim Baskin, International Minerals & Chemical Corp., Orlando.

5. Mr. and Mrs. Dale Kieffer, Smith-Douglass Co., Inc., Norfolk.
6. Morris Newman, Price Chemical Co., Louisville, W. B. Porterfield, National Potash Co., New York.

SOIL BUILDERS AWARDS PRESENTED

Top photo shows Louis H. Wilson, NPFI secretary and director of information, presenting award to Paul C. Johnson, editor of **Prairie Farmer**, Chicago, who won in the above-300,000 circulation group. In lower photo Editor R. J. McGinnis of **The Farm Quarterly**, Cincinnati, accepts scroll as winner of the under-300,000 circulation group award.

The scrolls, signed by six nationally-known leaders in agriculture and business who judged the contest, are for "superior journalistic contributions toward the building of the soils of our nation," and will be followed by presentation of plaques at the winter meeting of American Agricultural Editors Assn. in Chicago. Messrs. Johnson and McGinnis were guests at the NPFI convention, where the scrolls were awarded.

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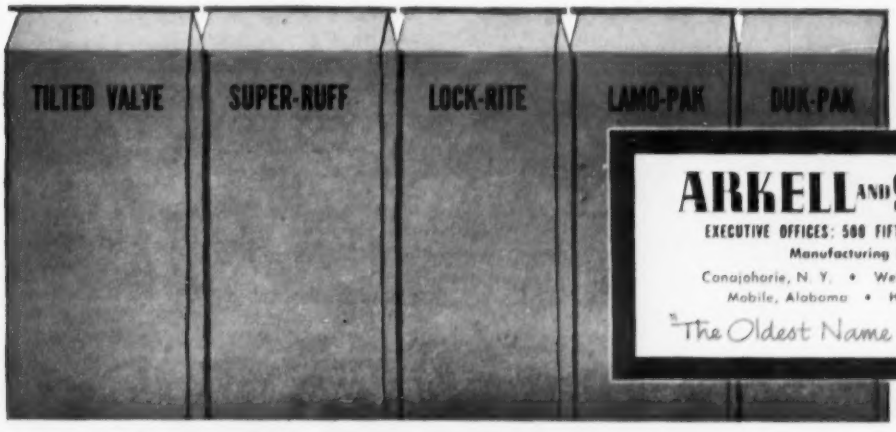

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2. A. H. Carnes, Central States Fertilizer Co., C. J. Struble, Standard Oil of Indiana, Mr. & Mrs. F. J. Ronan, Grace Chemical Co., all from Chicago.
3. Mrs. W. R. Allstetter, Washington, Joe Culpepper, Spencer Chemical Co., Kansas City, W. R. Allstetter, NPFI, Washington.
4. Dick Deal, F. W. Tunnell & Co., Philadelphia, Walter Colvin, Nitrogen Div., New York, Mr. & Mrs. Lee Karp, Morris Karp & Son, Farmingdale.
5. Mr. & Mrs. B. F. Sutherland, Mr. & Mrs. F. C. Wooten, Jr., all with Armour Fertilizer Works, Atlanta.
6. Ralph Boynton, U. S. Potash Co., Atlanta, Mr. & Mrs. Wallace Hicks, Wilson & Toomer Fert. Co., Jacksonville.

In the initial "awareness" stage, mass media generally are named most often as the source, mass media share honors with government agencies in the "interest" or "information" stage that follows. In the third phase of "evaluation"—where the knowledge sought is more specific and local in nature—neighbors become the leading providers of facts.

When it progresses to the point of "trial" on the farmer's part, neighbors and friends again play an important part, as do government agencies; here the information source can vary substantially with the degree of change the new method involves, and with the relative size of the trial itself. The final step, "adoption," depends largely on the results of the trial, and upon the nature of the farmer himself.

The two sociologists broke farmers down into five general groups: the "innovators" who comprise only about 3% of farm operators; the

THEY HAD FUN, TOO——
1. R. P. Thomas, International Minerals & Chemical Corp., Chicago, G. R. Turner, Pacific Coast Borax Co., Knoxville.
2. Semi-finals: Marion Nabors, Ashcraft-Wilkinson Co., Tampa, Ralph Huffman, Huff & Assoc., Maryville, Kansas, Carl Rose, National Association County Agents, Fayetteville, Ark.
3. Robert Parks, Memphis, and W. J. Haude, New York, both with Grace Chemical Co., measure a close one.

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PRILLED AMMONIUM NITRATE is produced at this modern plant of Brea Chemicals, Inc., Subsidiary of Union Oil Company of California, Brea, California. Link-Belt equipment includes special dust-tight oscillating conveyors, coating drum, vibrating screens, pre-dryer and dryer, cooler and belt conveyors. In addition to ammonium nitrate, Link-Belt's vast experience applies to dry-mix, superphosphate, ammonium phosphate, ammonium sulphate, urea, granular and other types of fertilizer.

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4. **ERECT THE PLANT,** providing crews and supervisory service.
5. **START THE OPERATION,** with field engineers ready to make final adjustments.

IN addition to normal production demands, requirements of this new Brea Chemicals, Inc. plant called for special processing equipment and dust control efficiency. Through Chemical and Industrial Corporation, engineering-construction contractor, Link-Belt supplied standard and specialized equipment to satisfy these requirements . . . has helped maintain full-capacity output and top product quality.

Link-Belt stands ready to cooperate with your engineers or consultants in supplying the exact equipment your process requires. Or, with a unique 5-phase "turn-key" service, Link-Belt can set up your entire operation . . . handling every last detail under a single, all-inclusive contract. To learn more of the savings this service can bring you, call your Link-Belt office. Or write for Book 2459.

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2. Lee Karp, Morris Karp & Son, Farmingdale, A. M. and Howard McIver, Alex M. McIver & Son, Charleston, S. C.
3. David Staples, Dow Chemical of Canada, Ontario, Ray White Spencer Chemical Co., Chicago.
4. Mr. and Mrs. B. E. Stewart, Jones & Laughlin Steel Co., Pittsburgh.
5. Maurice Lockwood, International Minerals & Chemical Corp., Chicago, Roy Camp, Chilean Nitrate Sales Corp., New York.
6. Edw. R. Jones, Apothecaries Hall Co., Waterbury, Ed Harvey, Nitrogen Division, New York.
7. Sid Keel, International Minerals & Chemical Corp., Chicago, Charles R. Martin, Miami Fertilizer Co., Dayton.
8. King Luddington, Chase Bag Co., New York, Mr. & Mrs. Sidney Bierly, California Fertilizer Association, San Marino, W. E. Snyder, Wilbur Ellis Co., Los Angeles, president California Fertilizer Assoc.
9. Omar Sanders, Fertilizer Industries, New York, Mrs. Louis Wilson, Washington, Paul Sanders, Southern Planter, Richmond.
10. G. G. Scott, Lion Oil Co., El Dorado, Mrs. Bruce Osborn, Tom Athey, Raymond Bag Co., Baltimore.
11. T. W. Oliver, Armour Fert. Works, Atlanta, Steele Wright, Texas Farm Products Co., Nacogdoches, H. V. Miller, Armour Fert. Works, Atlanta.
12. Paul Truitt, NPFI, Washington, Hugo Riemer, Nitrogen Division, N. Y.

"early adopters" who are roughly 5%; the "informal leaders," approximately 12%; the 65% majority (which can be subdivided into early and later adopters; and the 15% non-adopters. They enumerated the social and economic characteristics of each class, so that their findings can be put to practical use by the industry.

Other information sources not mentioned heretofore were salesmen and local dealers, whom Drs. Bohlen and Beal stated were coming in for more frequent and favorable mention as factors especially in the trial stage. They also pointed out that farmers are becoming more willing to accept the truth of advertisements than in the past. Additionally, other informers are entering the picture more frequently—landlords, bankers and farm managers.

These acceptance patterns can be upset, they continued, if proper techniques are used. As a closing caution, they reminded that information programs must be geared to the stages various farmer classes are in at any moment, with consideration for the fact that all classes are progressing at different rates, and any complete program must serve the needs of each.

Final speaker on the morning's program was Glenn Fouche, president of Stayform Co., Chicago, who brought an inspirational and amusing message on "Dramatize Your Selling." Pointing out that a surplus of goods is nothing more than a shortage of selling ideas, he urged management to take a close look at their personnel—beginning with a thorough self-examination.

It's acid-resistant

it's strong

it's low-priced

it's the new Bemis

Acid-Resistant Thread

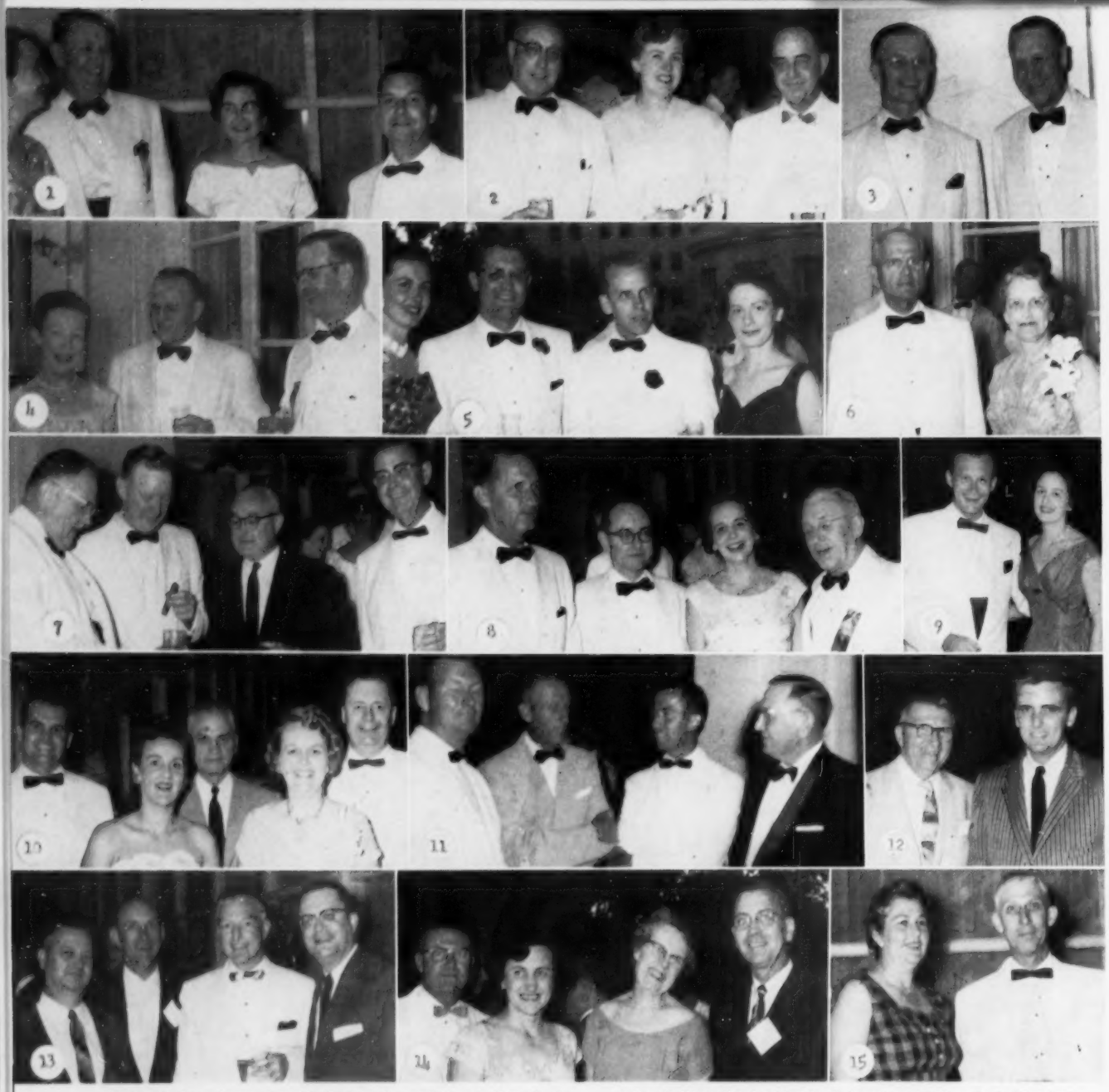
The new Bemis Acid-Resistant Thread meets a longfelt need for thread for the manufacture and closing of multiwall paper and laminated bags for fertilizers and chemicals with substantial acid content.

You can pack with confidence by using Bemis Bags made with the new Bemis Acid-Resistant Thread . . . and by using this thread in your bag-closing operation. It is made in both 4-ply and 5-ply and handles just like the famous Bemis Special Thread® in a sewing machine. No sewing machine adjustments are necessary.

Get the *complete* story . . . *advantages, prices* . . . from your Bemis Man.

Bemis

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities



1. Mr. & Mrs. Leroy Donald, El Dorado, and Mr. & Mrs. G. G. Scott, New Orleans, all with Lion Oil Co.
2. Graham Campbell, Chamberlain & Barclay, Cranbury, Mrs. B. R. Pickering, New York, Eddie Geoghegan, Southern Cotton Oil Co., New Orleans.
3. Nelson Wnd and Ed Kolb, boetth with American Potash & Chemical Corp., New York.
4. Mr. and Mrs. Porter Brinton, Hydrocarbon Products, New York, Sinclair McCoy, International Minerals & Chemical Corp., Chicago.
5. Mr. & Mrs. Francis Jornlin, Du Pont, Wilmington, Mr. & Mrs. Al Bowers, Swift & Co., Chicago.
6. Mr. & Mrs. D. H. Banks, Banks Fertilizer Co., St. Matthews, S. C.
7. A. A. Schultz, Reading Bone Fertilizer Co., Reading, John Sanford, Jr., Woodruff Fert. Co., New Haven, Conn., Frank Greely, New Orleans, Roy Gurkin, Raleigh, both with Fulton Bag & Cotton Mills.
8. Marion Nabors, Tampa, Mr. and Mrs. Bob Ashcraft, John Foy, all of Atlanta, all with Ashcraft-Wilkinson Co.
9. Mr. & Mrs. Charles Martin, International Minerals & Chemical Corp., Chicago.
10. Mr. & Mrs. Ben McCollum, J. R. Simplot Co., Pocatello, R. A. Jones, Anaconda Co., Anaconda, Mr. & Mrs. Sidney Bierly, California Fertilizer Assoc., San Marino.
11. Allen Burson, Cotton Producers Assoc., Cordelle, W. T. Steele, Coop. Fert. Service, Richmond, Quentin Lee and J. E. Nunnally, both with Cotton Producers Association, Atlanta.
12. Kenneth Morrison, Philipp Bros. Chemicals, New York, Tom Morrison.
13. T. C. Rogers, Nitrogen Division, New York, G. R. Nooe, Ohio Valley Fertilizer Corp., Maysville, Angus Taylor, The Chemical & Industrial Corp., Cincinnati, Dean Keller, Nitrogen Div., Indianapolis.
14. Mr. & Mrs. Werner Nelson, American Potash Institute, Lafayette, Mr. & Mrs. Proctor Gull, Spencer Chemical Co., Kansas City.
15. Mr. & Mrs. T. H. Pitt, Planters Cotton Oil & Fert. Co., Rocky Mount, N. C.

"We can delegate authority, but we cannot delegate leadership," he reminded, and a sales force can be led further than it can be pushed. Calling for more imagination in selling, he advised top management to consider a salesman trained only when it has inspired him to creative thinking.

Tuesday's general session opened with a premiere showing of NPFI's new color film "What's in the Bag," showing where the materials come from, and how they are refined, processed and mixed prior to sale. Next came the Soil Builders Awards for Editors (see pictures accompanying this report for story on awards).

John Ott, president of John Ott Pictures, Inc., Winnetka, Ill., a nationally-known authority on time-

New NPFI Officers: Already discussing plans for the coming year for the National Plant Food Institute are four of the organization's key officers, elected at the Institute's first annual convention. They are, left to right: Paul T. Truitt, executive vice president; C. T. Prindeville, president; Edwin Pate, chairman of the Board; and Dr. Russell Coleman, executive vice president. Mr. Prindeville is vice president of Swift & Co., Chicago, and Mr. Pate is president of the Dixie Guano Co., Laurinburg, N. C. Other officers, not pictured here, who were reelected, are: W. R. Alstetter, vice president; Louis H. Wilson, secretary and director of information; and William S. Rittnour, treasurer.

Officers of NPFI's Research and Education Committee are, left to right: W. H. Garman, of National Plant Food Institute, secretary of the committee; Borden Chronister, Nitrogen Division, Allied Chemical & Dye Corp., and George Serviss of G.L.F. Soil Building Service, co-chairmen of the committee during 1955-56; and A. H. Bowers, of Swift & Co., newly-elected vice chairman. Dr. Vincent Sauchelli, of Davison Chemical Co., Division of W. R. Grace & Co., was elected chairman of Committee for 1956-57, but was not able to be present for the annual business meeting.

lapse photography, showed members and guests exclusive time-lapse films on the growth of plants showing comparative results of proper feeding.

Through the eyes of the time-lapse camera, the audience actually saw underground pictures of the plant roots as they were growing and reaching out into the soil. One graphic scene showed the roots actually coming into contact with plant food. Another of the most dramatic scenes showed the growth response of a plant suffering from an extreme chloratic condition, when treated with one of the new chelated iron formulas.

Mr. Ott's film presentations were selected from a number of his different films and included "shots" of his new time-lapse air-conditioned greenhouse made of plastic which permits more of the sun's rays to penetrate than will pass through glass.

He also presented pictures of, and explained how, the various devices work that he has developed over the past 30 years for making time-lapse pictures.

His films included new microscopic subjects, such as cell division and growth, development of pollen tubes, streaming of the protoplasm within the cells of a leaf and actual fertilization taking place of a plant that reproduces by means of real eggs rather than seeds.

At a showing on Monday, for ladies attending the convention, Mr. Ott had shown a series of his time-lapse pictures recently used by RCA and National Broadcasting Co. on closed color television circuits.

Some of the pictures shown currently are being edited into Walt

Grace urea prills ...sure source of

..nitrogen for all crops

..sales and profits for dealers

Today, more than ever before, cost-conscious farmers look to nitrogen fertilizers to help increase yields and profits.

Grace Urea Prills is a sure source of reliable, quality nitrogen to thousands of successful farmers. They've found this high analysis 45% nitrogen does a great job of growing all crops faster . . . bigger . . . at far less cost – and labor – than lower analysis fertilizers.

And because so many farmers prefer and rely on Grace Urea Prills, dealers know it as a sure source of sales and profit.

Persuasive Grace advertising in leading farm and trade publications is helping dealers realize greater sales too.

For complete information, contact the Grace representative nearest you or drop a card to Grace Chemical Company today.

Grace chemical co.
DIVISION OF W. R. GRACE & CO.
memphis tennessee

SALESMEN... to help boost YOUR profits!

Boost the Cost-Price Squeeze!
each $1 properly invested in LION AMMONIUM NITRATE will return $3 to $6 on the average corn crop
Extra profits for you are
MIXED FERTILIZER
LION OIL COMPANY

LION Advertisements Sell LION Nitrogen, *and Your Mixed Goods, Too!*

Continuous Lion advertising appears in leading farm publications, month-after-month, to pre-sell the Lion brand to farmers—and to sell the value of *your mixed fertilizers as well!*

Current advertisements are appearing in Farm and Ranch-Southern Agriculturist, Progressive Farmer, The Farmer, Nebraska Farmer, Kansas Farmer, Prairie Farmer, Wallace's Farmer & Iowa Homestead, Wisconsin Agriculturist and Farmer, Missouri Ruralist and Missouri Farmer. All of these advertisements are in color.

Each Lion advertisement promotes the economic benefits of properly using fertilizers, including Lion Ammonium Nitrate, to help increase the farmer's profits. Each advertisement sells *hard* on the importance of soil tests in the intelligent use of all commercial fertilizers. Lion, a leader in nitrogen production, leads the way to good fertilization practices . . . to better profits for you!

LION'S QUALITY LINE OF NITROGEN FERTILIZER MATERIALS

LION ANHYDROUS AMMONIA—82.2% nitrogen. Quality guaranteed.
LION AQUA AMMONIA—Ammonia content above 30%—other grades to suit your requirements.
LION AMMONIUM NITRATE FERTILIZER—Improved spherical pellets. Guaranteed 33.5% nitrogen.
LION NITROGEN FERTILIZER SOLUTIONS—Various types to suit your particular manufacturing needs.
LION SULPHATE OF AMMONIA—White, uniform, free-flowing crystals. Guaranteed 21% nitrogen.

LION OIL COMPANY
A DIVISION OF MONSANTO CHEMICAL COMPANY
EL DORADO, ARKANSAS

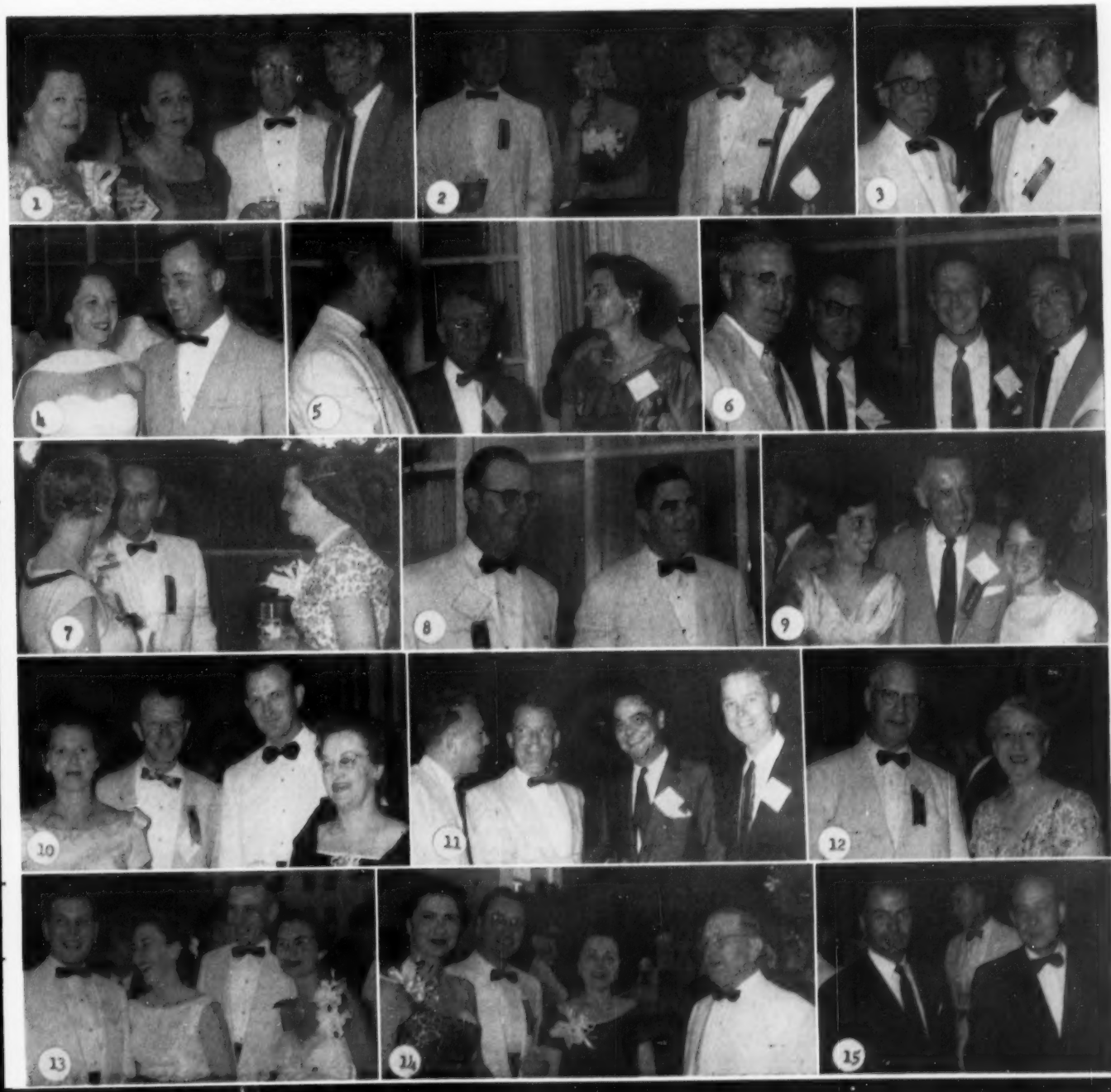
DISTRICT SALES OFFICES: Lion Oil Building, El Dorado, Ark. • Insurance Exchange Building, Des Moines, Ia. National Bank of Commerce Building, New Orleans, La. • 1401 Building, Atlanta, Ga.

Disney's new feature, "Secrets of Life," which will have its premiere showing next fall. Many of the films shown will be used on the Disneyland Program of September 26, when Mr. Disney will pay tribute to John Ott and his time-lapse photography.

The program for the ladies included pictures of many colorful flowers such as the Bird of Paradise, some of the newest varieties of rare camellias from the Yunnan Province of China and pictures of many rare and unusual orchids from all over the world.

Concluding speaker of the day was Senator J. W. Fulbright of Arkansas, chairman of the Senate committee on Banking and Currency, who discussed "Our Nation's Role in World Tension." Deploring the fact that under present legislation 85% of our foreign aid will be in the form of military hardware, while technical aid and assistance in the form of loans is being neglected.

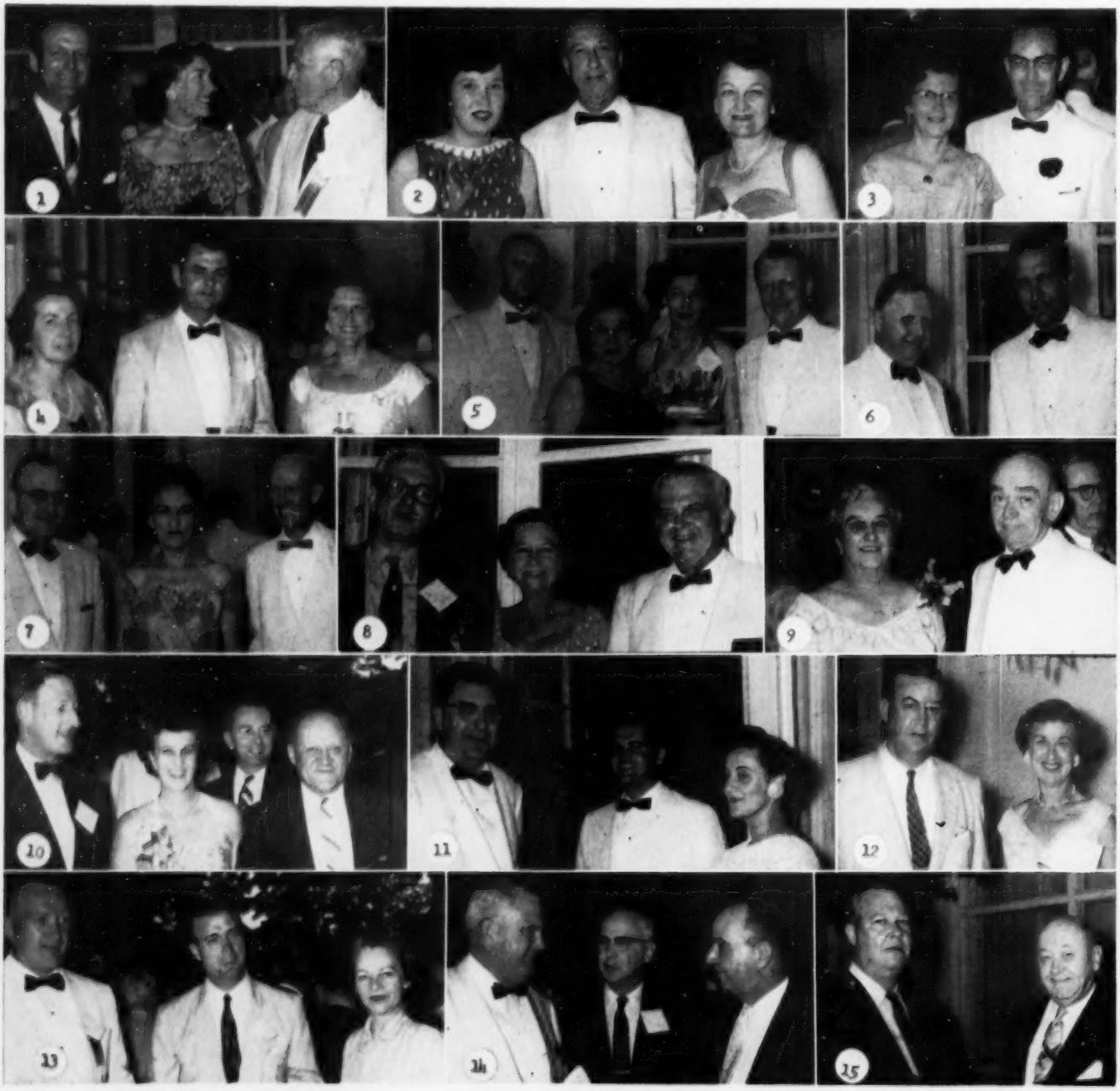
1. Mrs. Edwin Pate, Laurinburg, Mr. & Mrs. Eugene German, Duval Sulphur & Potash Co., Houston, Marion Nabors, Ashcraft-Wilkinson, Atlanta.
2. Mr. & Mrs. John Fletcher, Evanston, Horace Albright, and Dean Gidney, New York, all with U. S. Potash Co.
3. Warren Beiser, U. S. Steel Co., Birmingham, B. M. Machen, Lion Oil Co., El Dorado.
4. Mr. & Mrs. Bill Morgan, International Minerals & Chemical Corp., Chicago.
5. John Conner, Sellers & Conner, Washington, Dr. M. P. Etheredge, Assoc. American Fertilizer Control Officials, State College, Miss., Mrs. Conner.
6. John French, and C. E. Workman, both with Virginia Carolina Chemical Corp., Richmond, John R. "Dugan" Taylor, Grand River Chemical Co., Tulsa, Charles Harding, Virginia Carolina Chemical Corp., Richmond.
7. Mrs. John Ott, Jr., Winnetka, Mr. & Mrs. Albert Woods, Potash Co. of America, Washington.
8. Sinclair McCoy, International Minerals & Chemical Corp., Chicago, Borden Chronister, Nitrogen Div., Hopewell.
9. Patty Geoghegan, New Orleans, R. U. Haslanger, Escambia Bay Chemical Co., New York, Jan Geoghegan, New Orleans.
10. Mr. & Mrs. A. W. Manley, Mr. & Mrs. John Sanders, all with Mississippi River Chemical Co., St. Louis.
11. J. E. Taylor, Jr., Chicago, Stewart Eckers, Baltimore, both with Bemis Bro. Bag Co., Gus Ashcraft, Duval Sulphur & Potash Co., Houston, Wm. E. Merritt, H. J. Baker & Bro., Atlanta.
12. Mr. & Mrs. J. B. Johnson, Hercules Powder Co., Wilmington.
13. Mr. & Mrs. E. C. Kapusta, New York, Burke Garrette, Atlanta, all with U. S. Potash Co., Mrs. W. W. Wilson, Columbus, Ohio.
14. Mr. & Mrs. Bob Mell, Potash Co. of America, Atlanta, Mr. & Mrs. Tom Camp, Southwest Potash Co., New York.
15. W. H. Wurster, and Earl Gettinger, both with Woodward & Dickerson, Philadelphia.



At the end of his talk, the senator opened the floor to questions, and a lively discussion followed.

Hugo Riemer (Allied Chemical & Dye Corp., Nitrogen Div., New York) presented Memorial Resolutions as the meeting moved into the annual business session. The new nominating committee was elected without dissent. A complete list is slate of directors offered by the printed elsewhere in this account.

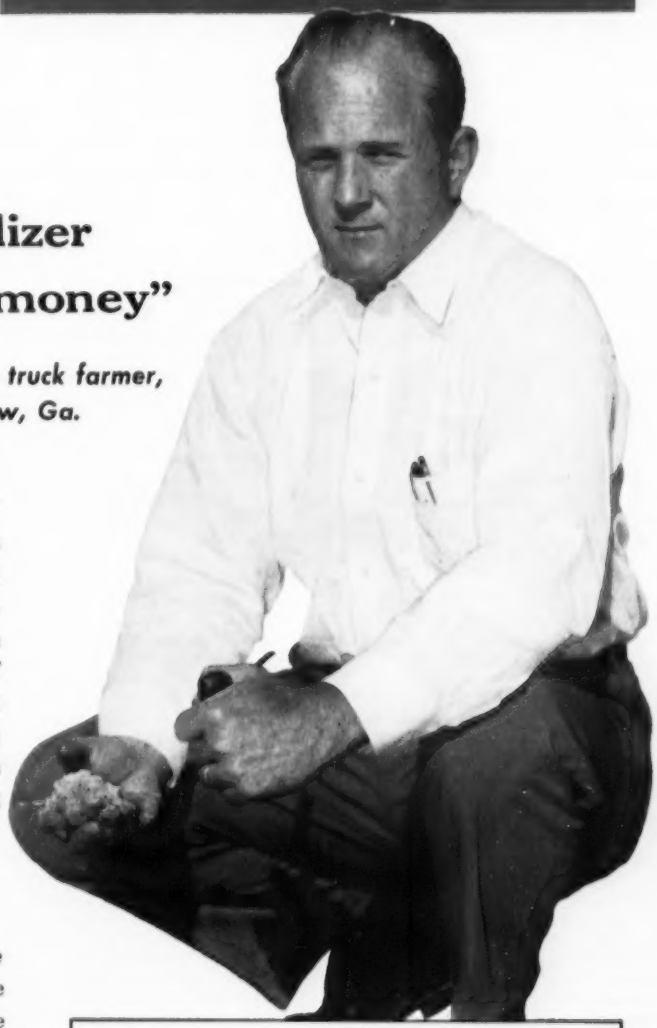
1. Mr. & Mrs. Bob Linderman, International Minerals & Chem. Corp., Chicago; John V. Collis, Federal Chemical Co., Louisville.
2. Ruth Krueger, Mr. & Mrs. Harold Krueger, Stedman Foundry & Machine Co., Cincinnati.
3. Mr. and Mrs. Z. H. Beers, Midwest Soil Improvement Committee, Chicago.
4. Mrs. Elbert Carvel, Laurel, Del., Mr. & Mrs. Vincent Rebak, Grace Chemical Co., New York.
5. Mr. and Mrs. R. D. Martinet, E. Rauh & Sons, Indianapolis, Mr. and Mrs. Lawrence Byck, U. S. Industrial Chemicals, New York.
6. Raymond Cartledge, Cartledge Fertilizer Div., Wilson & Toomer, Cottondale, Fla., Frank Taylor, Wilson & Toomer, Jacksonville.
7. John M. Watt, Armour Fert. Works, Atlanta, Mr. & Mrs. Walton Dennis, International Minerals & Chemical Corp., Raleigh.
8. Frank S. Washburn, American Cyanamid Co., New York, Mr. & Mrs. Fred Woods, Gulf Fertilizer Co., Tampa.
9. Mr. & Mrs. Frank Reed, Lion Oil Co., El Dorado.
10. J. T. Trotter, Bemis Bro. Bag Co., E. Pepperell, Mr. & Mrs. Victor Ericson, Consolidated Rendinering Co., Boston, Paul Prosser, The Baugh & Sons Co., Baltimore.
11. Warren Huff, Ashcraft-Wilkinson Co., Columbus, Ohio, Mr. & Mrs. Ben D. McCollum, J. R. Simplot Co., Pocatello.
12. Mr. & Mrs. Tom Bridgers, Farmers Cotton Oil Co., Wilson.
13. Warren Johnson, U. S. Industrial Chemicals, New York, Mr. & Mrs. B. W. Smith, Minnesota Liquid Fert. Assoc. (Phillips Petroleum Co.), Minneapolis.
14. Fred J. Woods, Gulf Fertilizer Co., Tampa, Frank Keenen, E. I. Du Pont Co., Wilmington, Eddie Geoghegan, Southern Cotton Oil Co., New Orleans.
15. A. B. Verdery and Dr. Arthur M. Smith, both with Olin Mathieson Chemical Corp., Baltimore.



HOW UNION BAG BUILDS MORE BUSINESS FOR THE FERTILIZER INDUSTRY

"Now I know... cutting down on fertilizer actually costs me money"

John Patrick, truck farmer, Marlow, Ga.



"I've known about fertilizer for a long time," says John Patrick, who with his brother Carl runs a 100-acre truck farm near Marlow, Ga., "but I didn't realize that every *dollar* invested in fertilizer can bring a farmer a *four dollar* return in crop value! That's how the U. S. Department of Agriculture figures it. Like a lot of farmers, I'd tried to *save* money by cutting down on fertilizer, but actually I was *losing* money, as I got lower yields on my crops. Now I know fertilizer is my best investment."

Union's information program increases fertilizer use

Mr. Patrick discovered his "profit formula" in one of the farm magazines he reads. The article was one of many prepared by Union as part of a countrywide newspaper-radio-television educational campaign to help farmers use more scientific methods.

One of the main purposes of this program is to show your customers how to make the best use of fertilizer. As one of the major manufacturers of Multiwall paper sacks for fertilizer, Union Bag is happy to make this contribution to the industry.

Mutual Fertilizer Company is one of the many leading manufacturers who package their products in Union Multiwall bags.

Mr. Charles Ellis Jr., President, Mutual Fertilizer Company, Savannah, Ga.

"I believe Union Bag's information program on the scientific use of fertilizer will help the farmers. Union does as well with its Multiwalls as it does with its fertilizer program. We use Union Multiwalls. They're among the best."

UNION Multiwall Bags

TRADE MARK UNION

UNION BAG & PAPER CORPORATION · WOOLWORTH BUILDING, NEW YORK 7, N. Y.

Survey Of Fertilizer-Pesticide Mixtures

USED FOR FOOD CROPS ONLY

For the third time in as many years, Rodney Berry has come up with a thoroughgoing analysis of state laws, regulations and practices covering sale of fertilizer-pesticide mixtures for use on food crops. In this most recent study, it becomes apparent that his tabulations are doing more than just letting us know where we stand. This medium for exchange of information among control officials is doing much to foster more practical regulation and more uniform enforcement.

by Rodney C. Berry

Virginia State Chemist

Notes refer to numbered questions in questionnaire.

Alabama: 7—Aldrin is the only one registered in fertilizer this year. We had fertilizers containing DDT and Dieldrin registered in the past. **11, 12** and **13**—No regulations. **20**—Require signed written order with full information. **24**—No request for such mixtures.

Arizona: No Fertilizer-Pesticide Mixtures for Food Crops are sold in Arizona.

Arkansas: 7—Aldrin. **8** and **9**—State Experiment Station results so far are indeterminate. No recommendations made. **24**—Problem has never arisen. If properly labeled, permission would be given, provided same was an effective formulation.

California: 7—Aldrin, heptachlor, zineb, chlordane. **24**—Must be registered. **Comment:** Sales of fertilizer-pesticide mixtures still of little consequence in California. Most products are only for lawns. Have had no difficulty so far and have required compliance with both fertilizer and pesticide laws.

Colorado: 7—Aldrin, Dieldrin and Chlordane. **22**—Not yet. **24**—Such mixtures not sold in Colorado.

Connecticut: No report.

Delaware: 7—No regulations. **Comments:** To date, these mixtures have not been a problem. Most mixtures have been used for lawns and golf courses for weed control. Some thought has been given to regulations but no definite action taken.

Florida: 12—No regulation. **17**—Yes, except for registration under pesticide law. **20**—Not permitted. **7**—Aldin, Chlordane and Heptachlor are permitted on food crops while dieldrin, DDT are not, except that DDT may be used on any crop for combating white fringed beetle.

Georgia: 7—Chlordane-Heptachlor, DDT, Aldrin, Dieldrin. **9** Permitted, if registered.

Idaho: No report.

Illinois: 7—Aldrin-Lindane-Chlordane-DDT-Boron. **20**—Fertilizer Law, yes, No Pesticide Law.

Indiana: 5—Fertilizer-Pesticide Mixtures must be registered with the State Chemist and must comply with established labeling regulations. **9**—Restricted by regulations—See Rule 8.

Iowa: 7—Aldrin. **Comment:** The sale of Fertilizer-Pesticide Mixtures in bulk is prohibited.

Kansas: 7—Aldrin and Heptachlor. **13**—Not required but is recommended. **24**—No Law covering gypsum or lime. No record of such mixtures.

Kentucky: 7—Aldrin, Chlordane and Heptachlor. **8**—Yes, with reservations. **Comment:** New Uniform Pesticide Law becomes effective July 1, 1956.

Louisiana: 7—Aldrin. **9**—So far our Experiment Station has recommended only one fertilizer-Pesticide mixture to be used on one crop **only;** namely, an approved fertilizer grade and aldrin to be used on sweet potatoes only. **24**—These products not covered by laws.

Maine: 7—Aldrin, chlordane. **9**—Must be recommended and approved. **11**—No request. **12**—No consideration to woven bags. **13**—All distributed in paper bags. **23**—Same tolerances apply as under Pesticide Law. **24**—No requests. **Note:** Regulations under consideration. All labeling under both laws apply to these mixtures.

Maryland: 7—Aldrin. **19**—We discourage such practices. **24**—Have not encountered this.

Massachusetts: Comment: The only fertilizers registered with pesticides are for use on lawns.

Michigan: 7—Aldrin, Chlordane. **10**—Regulations permitting the use of fertilizer-pesticide mixtures adopted 1955 in close accord to Virginia Regulations. **Comments:** Mixtures are subject to all requirements of both fertilizer and pesticide laws and must be registered under both laws.

Minnesota: 7—Aldrin and Heptachlor. **10**—General regulations which will govern these as well as other products are in the process of being promulgated. **11**—Product must be registered and have accompanying label when sold. **18**—Each product requires a complete label which can be tag or otherwise, tag is optional. **19**—These products must be registered. **24**—Yes, but no such products have been submitted for registration.

Mississippi: 1, 2, 3, 5 and **6.**—Have had no request for registration of a fertilizer-pesticide mixture for use on a food crop. If a request was received and granted, our answer to the above questions would be "Yes." **9**—We would accept pesticides only in accepted fertilizer grades. **24**—Yes, if compatible.

Montana: 7—Lindane and Chlordane. **11, 12, 13, 14, 15 and 16.**—Our present fertilizer law does not specifically cover these mixtures. We have no regulations. We check to be sure that label carries the ingredient statement with direction for use. **24**—Registration has not been requested.

Missouri: No report.

Nebraska: 7—Aldrin & Heptachlor. **Comment:** Because of no Nebraska Law governing pesticides, the addition of pesticides to fertilizer is allowed when proper notice of their presence in the fertilizer-pesticide mixture was given to the consumer by separate tag or otherwise according to federal requirements for that pesticide.

Nevada: No report.

New Hampshire: No comments made.

New Jersey: 7—Only on brands registered by one firm. A 3-9-12 fertilizer with 20% aldrin. **24**—No requests.

New Mexico: Note: Both laws administered by same official. No Fertlizer-pesticide mixtures sold or used on food crops in New Mexico. Do not have "custom mixtures" or "buyers mixtures."

New York: Comments: Have received no requests for registration of fertilizer-pesticide mixtures for use on food crops. If a request is received, it will be referred to New York State Experiment Station and New York State College of Agriculture before accepting same. New York Economic Poisons Law does not require registration of pesticides, the New York Fertilizer Law does not require registration. Fertilizer-Pesticide Mixtures for use on lawns, turfs and golf courses are permitted.

North Carolina: 7—Chlordane, aldrin, dieldrin, heptachlor, toxaphene and DDT. **11-12**—Hasn't come up—we advise against. **13**—All sold in paper bags. **24**—Hasn't come up. **Note:** See Regulations.

North Dakota: 7—Aldrin.

Ohio: 7—Aldrin. **24**—None sold.

Oklahoma: 7—Aldrin, Dieldrin. **19**—Yes, provided it is properly labeled and registered. **24**—The sale of lime or gypsum is not covered by the fertilizer law and it would not be permitted to be sold under the pesticide law unless it was previously determined that the lime or gypsum would not cause the pesticide to be less effective.

Oregon: 7—Aldrin, chlordane, parathion. **11, 12, 13.**—No regulations, but so far as known all sales have been in paper bags. **8**—Recommended for experimental use only. **Comment:** Most sales are of custom mix variety over which the state has little control, however, suppliers have voluntarily undertaken to attach warning labels to such mixtures.

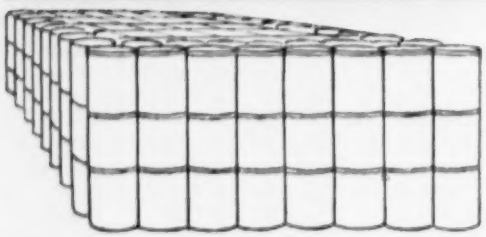
STATE, TERRITORY or COUNTRY	1. Are Fertilizer-Pesticide Mixtures sold in your State?	2. Are these mixtures registered under your Fertilizer Law?	3. Do you collect the regular fee and tonnage tax under your Fertilizer Law?	4. Do you have a law regulating Pesticides?	5. Are these mixtures registered under your Pesticide Law?	6. Do you collect the regular fee under your Pesticide Law?	7. Name the Pesticides which are generally used in Mixtures for food crops in your State.	8. Does your State Experiment Station recommend fertilizer-pesticide mixtures?	9. Do you limit registration and distribution of fertilizer-pesticide mixtures to those recommended by the State Experiment Station?	10. Have you issued regulations covering the sale and distribution of these mixtures?	11. Do you permit sale in bulk?	12. Do you permit sale in woven bags?	13. Do you require that mixtures be distributed in heavy paper containers?	14. Do you require a label showing an ingredient statement for both fertilizers and pesticides?	15. Do you require directions for use?	16. Do you require warning statement?	17. If you have a Fertilizer Law and a Pesticide Law, do you require that these mixtures comply with provision of both laws?	18. Do you require a special tag?	19. Do you permit "Buyers Mixtures" or "Farmers Mixtures" whereby a farmer may have any pesticide added to his fertilizer by the manufacturer?	20. Are sales under question 19 subject to regulation under Fertilizer and Pesticide Laws?	21. Do you analyze fertilizer-pesticide mixtures for fertilizer?	22. Do you analyze fertilizer-pesticide mixtures for pesticides?	23. Have you established tolerances for deficiency or excess of pesticide?	24. Do you permit the sale of lime or gypsum mixed with pesticides?
Alabama	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	Yes	No	*	*	*	Yes	Yes	Yes	Yes	Yes	Yes	*	No	No	No	*
Arizona	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Arkansas	Yes	Yes	Yes	Yes	Yes	Yes	*	*	*	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No
California	Yes	Yes	Yes	Yes	Yes	Yes	*	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	*
Colorado	Yes	Yes	Yes	Yes	Yes	Yes	*	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	*
Connecticut	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Delaware	Yes	Yes	Yes	No	—	—	*	No	No	No	Yes	Yes	No	No	No	No	—	No	Yes	No	Yes	No	No	Yes
Florida	Yes	Yes	Yes	Yes	No	No	*	No	No	Yes	No	*	No	Yes	No	Yes	*	Yes	No	*	Yes	Yes	No	Yes
Georgia	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	Yes	Yes	No	No
Idaho	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Illinois	Yes	Yes	Yes	No	No	No	*	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	—	Yes	No	*	Yes	No	No	No
Indiana	Yes	Yes	Yes	*	No	No	—	Yes	Yes	Yes	—	—	—	Yes	Yes	Yes	—	No	*	No	Yes	Yes	No	—
Iowa	Yes	Yes	Yes	Yes	No	No	*	Yes	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Kansas	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	Yes	No	Yes	No	*	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	*
Kentucky	Yes	Yes	Yes	Yes	Yes	Yes	*	*	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	*
Louisiana	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	*	—	Yes	Yes	—	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	*
Maine	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	*	No	*	*	*	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	*	*
Maryland	Yes	Yes	Yes	Yes	Yes	Yes	*	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	*	No	Yes	Yes	No	*
Massachusetts	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Michigan	Yes	Yes	Yes	Yes	Yes	Yes	—	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	—	Yes	Yes	No	—
Minnesota	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	No	*	*	Yes	No	Yes	Yes	Yes	Yes	*	*	Yes	Yes	Yes	No	*
Mississippi	No	*	*	Yes	*	*	—	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	Yes	Yes	No	*
Montana	Yes	Yes	Yes	Yes	No	No	*	No	—	No	*	*	*	*	*	*	No	No	—	—	Yes	No	No	*
Missouri	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nebraska	Yes	Yes	Yes	No	No	No	*	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	—	No	Yes	—	Yes	No	No	Yes
Nevada	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
New Hampshire	Yes	Yes	Yes	Yes	Yes	Yes	—	—	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	No
New Jersey	Yes	Yes	Yes	Yes	Yes	Yes	*	No	—	No	Yes	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	*
New Mexico	No	—	—	Yes	—	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
New York	No	—	—	Yes	—	—	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
North Carolina	Yes	Yes	Yes	Yes	No	No	*	No	No	Yes	*	*	*	Yes	No	No	No	Yes	Yes	—	No	No	No	*
North Dakota	Yes	Yes	Yes	Yes	Yes	Yes	*	—	No	No	—	—	No	Yes	Yes	Yes	Yes	No	—	—	Yes	Yes	No	—
Ohio	Yes	Yes	Yes	No	—	—	*	No	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	No	Yes	No	No	*
Oklahoma	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	*	Yes	Yes	Yes	Yes	*
Oregon	Yes	Yes	Yes	Yes	Yes	Yes	*	*	No	No	No	—	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
Pennsylvania	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes	No	Yes	No	Yes	No	No	Yes
Rhode Island	No	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
South Carolina	Yes	Yes	Yes	Yes	Yes	No	*	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	*
South Dakota	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	No
Tennessee	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	*	*	Yes	Yes	No	*
Texas	No	—	—	Yes	—	—	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Utah	No	—	—	Yes	—	—	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vermont	*	*	Yes	Yes	*	Yes	*	*	*	No	Yes	*	No	No	No	No	Yes	No	Yes	*	Yes	No	No	*
Virginia	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	—	Yes	Yes	Yes	No
Washington	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
West Virginia	Yes	Yes	Yes	No	—	—	*	Yes	No	No	Yes	Yes	No	No	No	No	—	No	Yes	—	Yes	No	No	Yes
Wisconsin	Yes	Yes	Yes	Yes	X	X	X	Yes	No	No	Yes	Yes	*	X	X	X	X	X	X	X	Yes	Yes	No	*
Wyoming	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Canada	Yes	Yes	Yes	Yes	Yes	Yes	*	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Hawaii	No	X	X	Yes	X	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Puerto Rico	Yes	*	Yes	—	*	*	*	*	No	No	*	Yes	No	Yes	*	*	Yes	No	Yes	Yes	Yes	No	No	*

* See question number under State head in reference notes. X No reply.

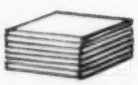
Use Fulton **WPPL*** Bags . . . store empties in less than 2½% of the space required by rigid containers!

*WATER-PROOF PAPER LINED

By: A. W. Moenkhaus
Sales Manager, Bag Division
Fulton Bag & Cotton Mills
St. Louis, Mo.



Empty Rigid Containers —Capacity 25,000 lbs.



Empty Fulton WPPL Bags —Capacity 25,000 lbs.

• It takes approximately 480 cubic feet of warehouse space to store enough empty rigid containers to hold 25,000 pounds of chemical fertilizer. But it takes only 11¼ cubic feet to store one bale of Fulton's WPPL (Water-Proof Paper Lined) Bags. And this single bale holds 250 of the 100-pound bags—enough to ship 25,000 pounds of the same material.

• For complete, low-cost protection of your chemical products, always specify Fulton WPPL bags. You have your choice of styles—economical burlap or cotton laminated to a selection of papers or polyethylene (which is acid and alkaline resistant). If you have an unusual packaging problem, we'll find a Fulton bag to fit your needs . . . or we'll design one!

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- Easiest handling, most economical storage.
- Lowest possible cost.

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Regulations issued under the Pesticide Law will apply to fertilizer-pesticide mixtures.

Pennsylvania: **7**—Aldrin, BHC, Lindane.

Rhode Island: No fertilizer-pesticide mixtures used on food crops. Fertilizer containing chlordane used on lawns.

South Carolina: **7**—Chlordane, Heptachlor, Dieldrin, aldrin, and toxaphene.

South Dakota: **7**—Aldrin-Dieldrin.

Comments: We apply all the requirements of the pesticide law and the fertilizer law to such mixtures as if they were separate products. Has worked well so far. Volume sold is small.

Tennessee: **7**—Aldrin, Dieldrin, Chlordane, Heptachlor. **8-9** — We have accepted registration on certain mixtures recommended by the Experiment Station, however, other mixtures not recommended have been registered. At present, we are requesting that they make more extensive recommendations to us. **19**—No requests for registration of such mixtures. **20**—Such mixtures not specifically mentioned in law. **24**—No request—the question has never arisen.

Texas: No fertilizer-pesticide mixtures registered, sold or used on food crops or otherwise. All such mixtures are banned.

Utah: No fertilizer-pesticide mixtures for use on food crops being sold in Utah.

Vermont: **7**—Aldrin. **1**—Sold on a "Custom Mix" basis. **2**—Mixtures consist of registered fertilizer with registered pesticides added to order. **3**—Individual pesticides are registered. **4**—Feasibility left up to individual farmer, but it is felt that for earth-pests, they are effective. **5**—Question has never been brought up—paper always has been used in few instances where mixtures have been made. **6**—Individual components must comply. **7**—Handled as if individual components were being sold (tonnage tax, etc.) **8**—This could be allowed—but to our knowledge has never been requested or done.

Virginia: **7**—Fertilizer grades 0-14-14, 0-10-20 and 2-12-12, containing 8 lbs. of aldrin or 8 lbs. of Heptachlor per ton, are recommended by the Virginia Experiment Station for use on peanuts for the control of Southern Corn Root Worms. **8**—No other Fertilizer-Pesticide Mixtures are recommended for use on food crops by the Virginia Experiment Station or permitted to be sold or distributed in Virginia. **18**—All label requirements of both laws must be printed **on the bag or on a label glued onto the side of the bag.** A red tag may also be attached to the end of the bag.

Washington: **7**—Aldrin, Heptachlor, IPC. **9**—We have a wide diversity of crops, soils, climate, etc. and the Experiment Station's tests do not cope with all of the needs. However, our Department's acceptance does not constitute a recommendation. 18—Economic Poison (Pesticide) label takes precedent over Fertilizer Label. However, each bag or container must have both labels attached. **23**—A tolerance is used, but it is not published, as it varies as to item and strength guaranteed.

West Virginia: **7**—Chlordane.

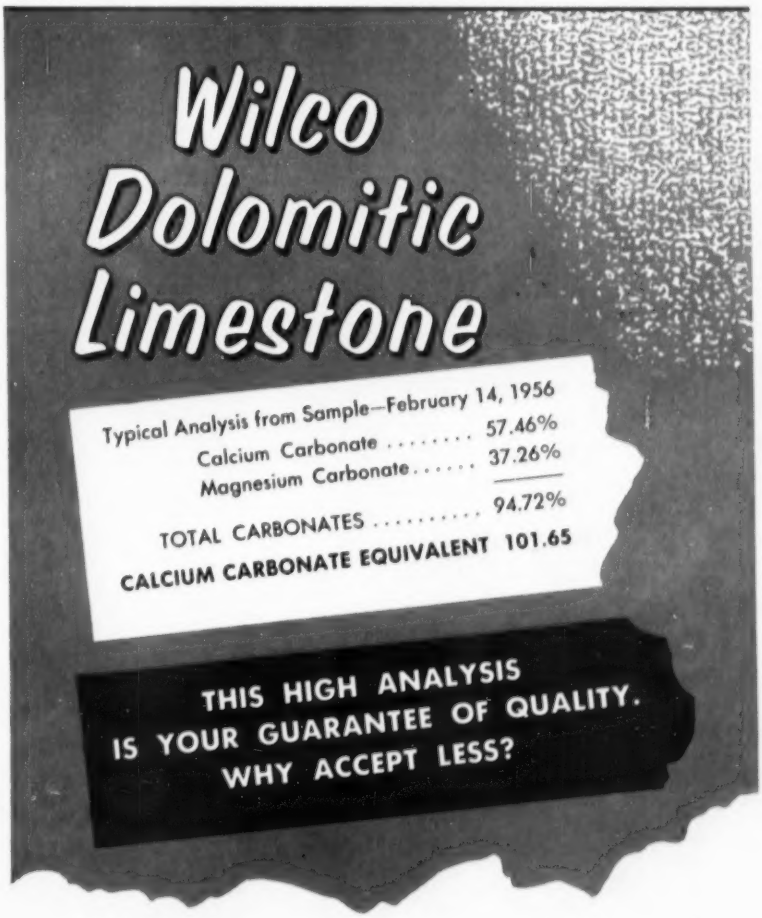
Wisconsin: **11, 12, 13**—No regulations but all mixtures are distributed in paper bags.

Wyoming: No report.

Canada: **7**—Aldrin. **Notes**: Fertilizer-Pesticide Mixtures are registered and labeled as required by both acts. Only used on crops as recommended and at recommended rates. Buyer's mixtures are on a prescription basis. Tolerances are established by law. No regulations covering the containers have been established.

Hawaii: No Fertilizer-Pesticide Mixtures sold or used on food crops in Hawaii.

Puerto Rico: 2—The fertilizer carrier is registered, not the fertilizer-mixture as such mixture. **5**—Only "custom mixes" sold at present. Registration is pending legal interpretation on the applicability of certain dispositions of our Pesticide Law and the Registrations to "custom mixes." **6**—See footnote for **5.** **8**—The Experimental Station finds aldrin effective against white grub affecting sugar cane roots only when fertilizer-aldrin is mixed thoroughly with soil. The fact that a large percentage of sugar cane plantations are ratoon crops makes impossible this necessary thorough mixing. **11**—Not used. **15, 16, 17**—See footnote for **5.** **22**—We should start analyzing within the next few months. **24**—Not used.



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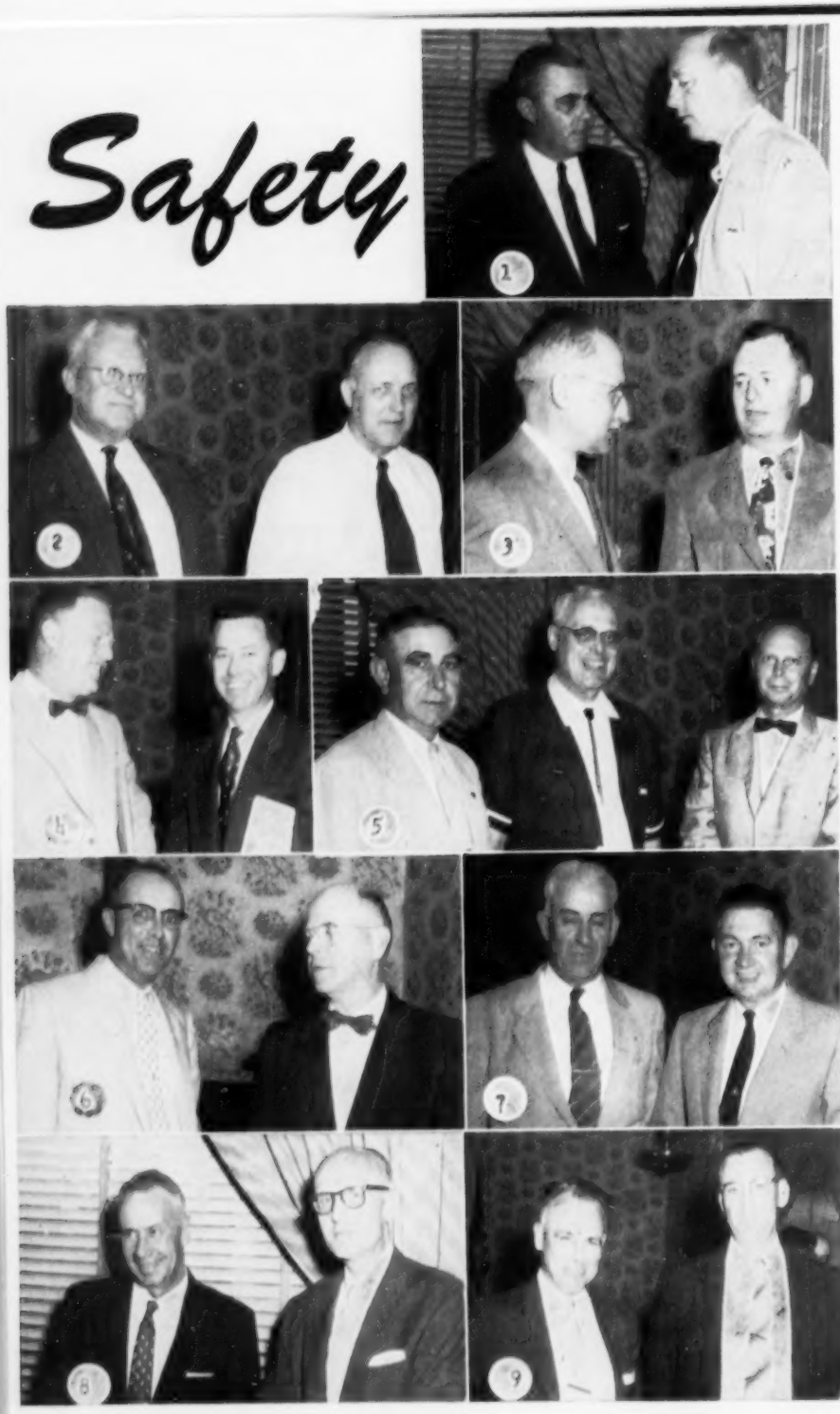

CF STAFF PICTURES OF SAFETY MEET

1. Chairman Curtis Cox, Virginia-Carolina Chemical Corp., Richmond, and Tom Clarke, G.L.F. Soil Building Service, Ithaca.
2. George Dietz, Fertilizer Mfg. Cooperative, Baltimore, and A. B. Pettit, Davison Chemical Co., Baltimore.
3. John C. Kato, National Safety Council, Chicago, and Sid Bierly, California Fertilizer Assn., San Marino.
4. Wayne High, The Baugh & Sons Co., Baltimore, and Bob Kelly, Swift & Co., Chicago.
5. Grayson Morris, Southern States Cooperative, Richmond; Dick Bennett, Farm Fertilizers, Omaha, and Rod Martinet, E. Rauh & Sons Co., Indianapolis.
6. J. P. Huckaby, Southern Fertilizer & Chemical Co., Roebuck, S. C., and S. Cottrell, Olin Mathieson Chemical Corp., Little Rock.
7. Vernon Gornto, Smith-Douglass Co., Norfolk, and Billy Creel, N. C. Dept. of Labor, Raleigh.
8. Mike Ellison, Mississippi Chemical Co., Yazoo City, Miss., and George Pelton, Smith Agricultural Chemical Co., Columbus, Ohio.
9. Ed Burroughs, F. S. Royster Guano Co., Norfolk, and R. G. "Bogey" Diserens, Phillips Chemical Co., Bartlesville Okla.

SAFETY SECTION EXECUTIVE COMMITTEE

Much progress was reported at the summer meeting of the Executive Committee, Fertilizer Section, National Safety Council, held at Roanoke, Va., June 9.

The session got under way early, opened with a few remarks by Chairman Curtis A. Cox of Virginia-Carolina Chemical Co., Richmond, who stated that the industry is presently engaged in more safety activity than ever before.

The initial report was that of the Engineering Committee, headed by A. B. Pettit (Davison Chemical, Baltimore), who described the present status of the data sheet compilation. Wayne High (Baugh & Sons, Baltimore), supplemented the committee's report with a summary of the safety contest which had 178 plants reporting thru March; he urged the Executive Committee to make every effort to get all remaining member plants to submit reports for the contest.

Tom Clarke (G.L.F. Soil Building, Ithaca) followed with the report that 14 new members had joined the section during the current year, with a cancellation of only four members; three of these, he pointed out, were due to mergers and changes, so only one of the withdrawn members could be considered as lost.

Recommendations in regard to the Motivation Study findings were presented by George Pelton (Smith Agricultural Chemical, Columbus). The subcommittee which studied the report prefaced its recommendations with the comment that the industry had not fully realized the potential that exists in safety prior to this, recognizing that the fertilizer plant deals with a different type of employee than industry in general does. Outlining the purposes of the study, they pointed with pride to the fact that the fertilizer section was the first to undertake a project of this sort.

As yet, the report continued, there is no pre-employment test that will effectively screen out accident-prone applicants during the rush-season hiring, so emphasis should be placed on a good year-

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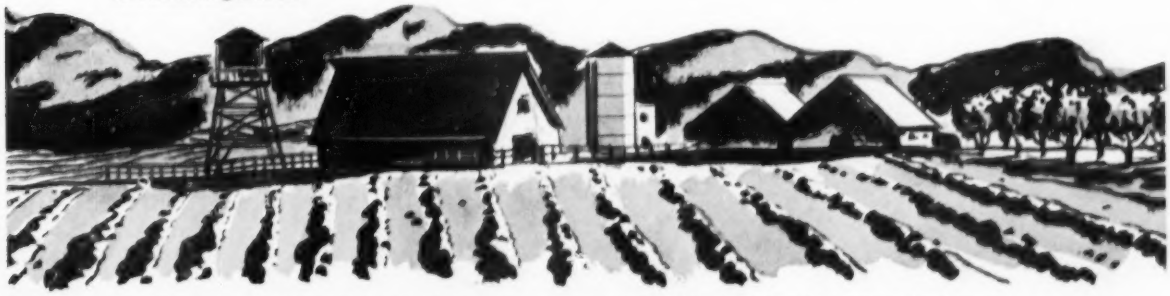
"HORSE & LION" Ammonium Nitrate Limestone: 20½% pure nitrogen (10¼% nitric and 10¼% ammonic nitrogen) and approximately 32 to 33% calcium carbonate. Granulated.

"HORSE & LION" Ammonium Sulphate Nitrate: 26% pure nitrogen (11% nitric and 15% ammonic nitrogen). Granulated.

"HORSE & LION UREA 44": 44% pure nitrogen. Coated pellets for dry use.

"HORSE & LION UREA 46": 46% pure nitrogen. Pellets without coating for liquid application or dry use where fast dissolving desired.



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round program. The committee stated that it had discarded the sociological phase of the findings, but urged that the remainder be put to use. While today's best approach to the safety problem is through a paternalistic formal authority pattern, the report concluded that more work needs to be done on the effect of group approval at the employee level and its effect on morale.

George Pelton continued by reporting for the Insurance Committee, which he chairmans, and described the progress (and problems) of the current project of charting compensation rates as correlated with accident frequency rates established in the safety contest.

After considerable discussion of these problems by the entire committee, Sid Bierly (secretary of California Fertilizer Assn.) asked if the committee could develop figures showing the percent of the state manual rate paid by individual companies which had established an effective safety program; these, he felt, could give tangible evidence of the profit derived from membership in the section. Several committeemen offered figures developed by their own firms, and consideration of a comprehensive project was taken under advisement.

Activities of the Research Committee were described by R. G. "Bogey" Diserens (Phillips Chemical, Bartlesville). While no requests for major undertakings had been received so far this year, he stated that the group had taken care of several minor requests.

Ed Burroughs (Royster Guano, Norfolk) gave a dual report. For the Visual Aids project, he announced that no poster ideas had been submitted to him, and called again for some suggestions. He then outlined the program he has developed for the fall meeting to be held in Chicago October 21-22. An excellent group of speakers will present practical safety ideas in a manner designed to appeal to all levels of management.

Billy Creel (N. C. Dept. of Labor, Raleigh) reviewed plans of the Supervisory Training Committee for an inaugural and experimental regional training program to be held at Wilmington, N. C., late in August. The two-day program will incorporate the fundamentals of teaching and training as well as instruction on use of the basic materials to be included in plant training programs. Interest was at a high pitch in regard to this long-planned trial program, designed to give key personnel a package plan for a supervisory safety training program in plants of all sizes.

John C. Kato (National Safety Council, Chicago) gave an inventory of the Section's activities, concluding that the still-young Fertilizer Section has earned considerable esteem from the Council. He described a 12-part plant safety practice questionnaire that the Council would like to send to member companies; the Committee, however, took action against recommending such a survey at the present time.

The meeting ended with a round-table discussion of the desirability of holding the usual fall meeting of the Executive Committee on the day preceding the opening of the Section's Conference. It was decided that this meeting would be called only if the general chairman felt it was necessary; otherwise, committee reports will be incorporated in the chairman's general report to the conference.

New Safety Manual Out

A "Supervisors Safety Manual" has been published by the National Safety Council.

Written by staff engineers of the Council's industrial department and carefully reviewed by safety experts from business, industry and government, the manual provides foremen with a comprehensive guide to all phases of industrial safety.

The manual can be used as a text for group training or self study or as a reference work to solve most of the general safety problems encountered by the foreman in his work day. It provides him with a basic knowledge of accident prevention techniques and human relations know-how.

The manual includes material on the human side of safety, maintaining interest in accident prevention, first aid, protective equipment, housekeeping, materials handling, machine guarding, portable power tools and fire prevention.

The "Supervisors Safety Manual" is illustrated with numerous photographs and drawings in its 354 pages. It is available to Council members for $3.25. Non-member prices are double. For a brochure giving a complete list of the contents and quantity prices, write the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Davison Again Wins Safety Award

For the fifth time in six years, the Davison Chemical Company Division of W. R. Grace & Co., has won on a national basis the award of honor of the National Safety Council. The award was presented by D. C. Lee, president of the Baltimore Safety Council and manager of industrial relations, Baltimore Division, Westinghouse Electric Corp., at a luncheon in the Marling House, and accepted by Marlin G. Geiger, president of Davison.

To win the award, Davison in 1955 scored a 51 per cent reduction in frequency of accidents and a 77 per cent reduction in severity of accidents from "par" rates established by the National Safety Council. These are derived from the company's own past experience and that of the industry's in which Davison operates.

A. B. Pettit, Davison's director of industrial health and safety, presided at the lunch. Among others present were Joseph F. DiDomenico, Commissioner of Labor and Industry for Maryland; G. H. Pouder, executive vice president of the Baltimore Association of Commerce; Wm. T. Harper, chairman of board and president of Maryland Casualty Co., and Clarence J. Reese, president of Safety Engineers Club of Baltimore.

Various units of the company have individually won other awards from the National Safety Council and the Manufacturing Chemists Association for their 1955 performance.

AP&C Wins Safety Award

The Los Angeles plant of American Potash & Chemical Corporation recently received an award from the National Saefty Council for an accident-free record during 1955.

The award was presented to the chemical company's Los Angeles plant at a Business and Industry Safety Contest dinner held at Los Angeles' Ambassador Hotel.

The current safety award marks the eleventh received by American Potash & Chemical Corporation and its various divisions during 1955-56, with nine such awards received last year and two so far in 1956.

In line with the present award, the company's Los Angeles plant is nearing completion in August of its third year without a lost-time accident.

CF Staff-Compiled TONNAGE REPORTS

FERTILIZER TONNAGE REPORT (in equivalent short tons) Compiled by COMMERCIAL FERTILIZER Staff

State	May		April		March	Jan.-Feb.-Mar. Quar.		July thru Dec.		Year (July-June)	
	1956	1955	1956	1955	1956	1956	1955	1955	1954	1954-55	1953-54
Alabama	.....	118,979[1]	312,676	249,173	246,239	347,660	433,390	167,372	272,068	1,114,238	1,074,892
Arkansas	.....	42,602[1]	90,923	72,578	92,766	141,981	134,588	60,294	59,887	330,776	366,225
Georgia	280,937	226,707	343,425	377,103	133,176	221,862	328,956	250,968	225,083	1,273,445	1,361,254
Kentucky	.....	.....	105,564	114,970	77,228	168,371	172,883	88,119	91,386	524,488	577,929
Louisiana	33,722	33,281	67,269	55,314	57,828	93,469	123,971	59,345	78,067	310,848	325,218
Missouri	.....	84,582[1]	.....	102,326[1]	.....	.....	189,351[1]	360,211	268,257	682,690	756,457
North Carolina	.....	216,217[1]	418,843	451,785	417,258	681,897	825,492	225,182	264,475	1,830,633	1,815,572
Oklahoma	13,915	9,088	13,969	13,913	18,749	31,884	35,770	69,542	58,406	122,305	144,367
South Carolina	88,324	75,096	169,465	156,388	286,994	452,619	521,836	119,947	132,604	928,715	936,558
Tennessee	121,941	104,721	97,059	88,416	33,783	50,736	63,463	136,925	167,383	523,349	523,303
Texas	65,024	60,376	77,188	63,947	101,164	180,802	214,792	193,704	212,885	584,269	560,381
California (reports submitted quarterly)						280,853	283,155	361,615	318,270	922,127	830,327
Virginia (reports submitted quarterly)						.....	287,367[1]	.....	159,185[1]	795,770	780,931
Indiana (reports submitted semi-annually)								242,530	284,994	1,158,960	1,180,091
New Jersey (reports submitted semi-annually)								.....	53,830[1]	.....	289,614[1]
Washington (reports submitted semi-annually)								48,749	58,162	182,348[1]	*
TOTAL	603,863	509,269	1,696,381	1,643,587	1,455,188	2,652,134	3,138,296	2,384,503	2,486,900	11,102,613	11,233,505

..... (not yet reported) * Not compiled [1] Omitted from column total to allow comparison with some period of current year.

MARKETS

ORGANICS: Producers of Nitrogenous Tankage for fertilizer use continue in comfortable sales position for current and fall shipment. Prices of Nitrogenous Tankage range from $3.00 to $4.00 per unit of Ammonia, bulk, f.o.b. production points for current shipment and $3.25 to $4.25 for September through December shipment.

With the recent announcement of prices of a major production of Activated Sewage Sludge price is $2.75 per unit of Ammonia and 50c per unit of APA, bulk, f.o.b. Midwest production point for July/August shipment, with a 20c per unit of Ammonia higher price for September, 1956 through June, 1957. Contracting for the new season is progressing rapidly.

Another production of Sewage Sludge currently is indicated at $3.00 per unit of Nitrogen and 50c per unit of APA bulk f.o.b. Southwestern production point.

CASTOR POMACE: Supplies continue at low levels, but in order to move tonnage during July price has been adjusted to $35.00 per ton bagged f.o.b. Northeastern production point.

DRIED BLOOD: Unground Blood in bags is indicated at $5.00 per unit of Ammonia f.o.b. Chicago area and around $4.50 in the New York area.

POTASH: Movement of Potash during the past season is estimated at around 90% of the previous fertilizer year, but producers are making contracts in fair volume for the new season and prices are practically the same as during the previous season.

GROUND COTTON BUR ASH: Demand continues excellent for this source of Potash which is primarily in the form of Carbonate of Potash. Supplies are available for shipment prompt through June. Current analyses vary from 38% to 42% K_2O which makes a delivered cost approximately that of Domestic Sulphate of Potash.

SUPERPHOSPHATE: With the season practically over, demand is slack and production curtailed to seasonal dimensions.

PHOSPHATE ROCK: Sustained strong demand for export Phosphate Rock has kept the market steady and prices are firm.

NITRATE OF SODA: Stocks at the ports are in comfortable position and demand is seasonal.

SULPHATE OF AMMONIA: The price reduction of $10.00 per ton beginning in early May resulted in somewhat increased demand, but producers still continue in long supply position. Price protection clauses will be part of new contracts as a result of insistence by buyers.

GENERAL: The fertilizer season just ending has been somewhat disappointing to fertilizer manufacturers in general, caused by unfavorable weather conditions in most farm areas, extremely competitive price situations, and general economic conditions. The volume of fertilizers sold this season probably will be somewhat less than during the previous season.

INDUSTRY CALENDAR

Date	Organization	Place	City
July 4-8	E. Canada Plant Food Prod.	Mt. Tremblant Lodge	Mt. Tremblant, Q.
July 12	S. C. Fertilizer	Edisto Sta.	Blackville, S. C.
July 18-20	S.W. Grade Hearings	Bucaneer	Galveston, Tex.
July 26-27	Illinois Fertilizer	U. of Ill.	Urbana, Ill.
Aug. 1	Ky. Fert. Conf.	Guignol Theatre	Lexington, Ky.
Aug. 30	S. C. P. F. E. S.	Clemson House	Clemson, S. C.
Oct. 18-19	Control Officials Assn.	Shoreham	Washington, D. C.
Oct. 21-22	Fert. Safety Section	LaSalle	Chicago, Ill.
Oct. 26	Middle West Soil	Edgewater Beach	Chicago, Ill.
Nov. 2	Sou. Soil Conf.	Atlanta Biltmore	Atlanta, Ga.
Nov. 7-9	Agric. Ammonia Inst.	Atlanta Biltmore	Atlanta, Ga.
Nov. 11-13	Calif. Fert. Assn.	Coronado	Coronado, Cal.

Man feeds the land

The importance of nitrogen to the soil is well known. Our agricultural chemicals industry is meeting the nation's rapidly expanding need for this essential element through increased production of ammonia. Applied in fertilizers, or directly into the soil, ammonia is doing much to revitalize the tired earth.

Lummus is currently engineering and constructing a number of ammonia plants in widely separated parts of the world. Our experience, which covers over a half century, is broad in chemical plants and petroleum refineries. Perhaps our staff and facilities can complement your own on *your* next project.

THE LUMMUS COMPANY, 385 Madison Avenue, New York 17, New York. *Engineering and Sales Offices:* New York, Houston, Montreal, London, Paris, The Hague, Bombay. *Sales Offices:* Chicago, Caracas. *Heat Exchanger Plant:* Honesdale, Pa. *Fabricated Piping Plant:* East Chicago, Ind.

LUMMUS

ENGINEERS AND CONSTRUCTORS FOR INDUSTRY

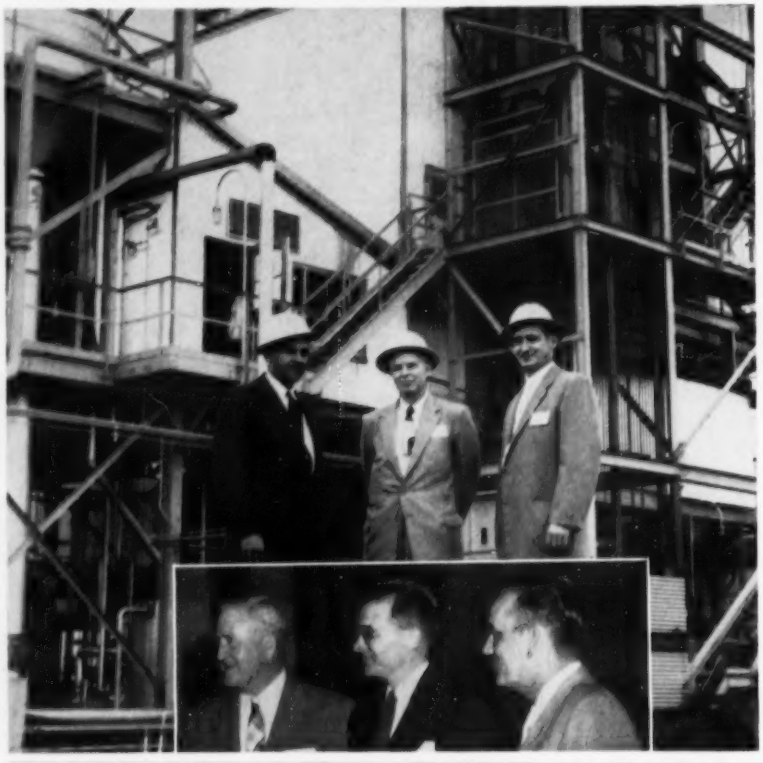
Summary Of Talk On

Trends In Processing Of Mixed Fertilizers

by

JOHN O. HARDESTY

at a meeting of fertilizer industry personnel under the auspices of Escambia Bay Chemical Corporation, and Ashcraft-Wilkinson Company at Pensacola, Fla., June 1, 1956.



Scenes from the technical meeting at Escambia Bay: Shown against the background of part of the great plant are Mercer Rowe, Jr., Ashcraft-Wilkinson—who were co-hosts; John O. Hardesty, main speaker; D. J. Stark, Escambia Bay vice-president and plant manager. Inset shows three of the 70 guests as they registered: H. H. McDonald, Pelham Phosphate; Lewis Marks, Atlas Powder; George Lanier, Swift & Co.

Only a few years ago the production of mixed fertilizers in the United States was generally recognized as chiefly a mixing operation. Ammoniation in excess of 3 pounds of ammonia per unit of P_2O_5 was not widely practiced because the processing conditions were conducive to loss of available P_2O_5 during subsequent curing. Only small amounts of highly-soluble salts were ordinarily used in mixtures. Sulfuric and phosphoric acids did not appear in the formula. Processing equipment for granulation and drying of mixtures was little used.

But, today the production of mixed fertilizers is rapidly becoming recognized as a chemical process, with the use of as much as 6 pounds of ammonia per unit of P_2O_5. Sulfuric or phosphoric acid is used to react with excess ammonia and product heat of chemical reaction which gives temperatures sometimes in excess of 212°F. Large amounts of highly-soluble salts, such as ammonium nitrate, are incorporated in many mixtures. Improved equipment for ammoniation, granulation, drying, cooling, and general processing is being installed in many fertilizer plants. Mixed fertilizer producers, chemists, chemical engineers, and machinery manufacturers are giving increasing attention to the manufacture of mixed fertilizers as a series of chemical processing steps.

Three important factors that have helped bring about these changes in processing methods are (1) the much greater production of concentrated materials which permits increasing the total nutrient content of mixed fertilizers, (2) the need for improvement in the storage and drilling properties of the high-analysis mixtures, and (3) the development and utilization of equipment for production of granular products.

Higher Analysis Mixed Fertilizers

The total concentration of primary nutrients in mixed fertilizers rose from about 21 percent in 1943-44 to nearly 28 percent in 1955-56. Many of the higher-analysis mixtures have room in the formula for no more than 5 percent of filler, liming material, or conditioning agent. Pending adoption of adequate liming programs, it is generally recognized that the incorporation of sufficient liming materials to render mixtures non-acid forming serves a useful purpose in some parts of the country, notably the South and Southeast. However, the results of a survey of mixed fertilizers marketed in the U.S. in 1949-50 have indicated that the total cost to the farmer of acid-insoluble material and limestone in mixtures was more than 22 million dollars, or $1.83 per ton of mixture. Reduction in the use of liming materials in mixed fertilizer would permit the manufacture of higher analysis products and would decrease the unit cost of plant food to the farmer.

It would also make possible the incorporation by the manufacturer of large proportions of low-cost nitrogen in his products. Such mixtures containing large proportions of highly soluble, hygroscopic salts are likely to absorb moisture and cake unless they are well-conditioned and packaged in high-grade, moisture-resistant bags.

Conditioning

Pile curing of mixtures prior to bagging has long been used as a method of improving the storage properties and drillability of the product. However, the conditions which enhance rapid and satisfactory curing, such as a relatively high moisture content, finely-divided ingredients, and high mechanical pressure for close packing in the pile, are diametrically opposed to the conditions that enhance satisfactory storage and drilling peoperties of the bagged product. Thus, curing does not always give a product having satisfactory physical condition.

Experimental evidence and commercial experience have indicated that conventional conditioning agents will alleviate caking to some degree but will not prevent it under all conditions of manufacture

and storage. Granulation has been adopted as the most satisfactory way of improving the storage properties and drillability of mixed fertilizers, and the products are easily conditioned with coating agents.

Granulation

The granulation process may include the operations of mixing solids with liquids such as water, ammoniating solutions, and sulfuric or phosphoric acids,—agglomeration, drying, cooling, sizing, and the recycling of undersize material to the initial stages of the process. In contrast to the conventional mixing procedure, this type of processing promotes rapid chemical reaction among the ingredients of the mixture, allows the use of sulfuric and phosphoric acids for neutralization of ammonia in excess of that required to react with the superphosphate present in the mixture, and provides heat of chemical reaction, which is often sufficient to dry the product to a sufficiently low moisture content for good physical condition.

ARIZONA

Thunderbird Chemicals have announced a $14,500,000 liquid and dry fertilizer plant to be built on the 80 acres near Phoenix, their purchase of which was reported here in May. **Electric Bond and Share** has completed marketing and other basic studies, and power has been contracted for from **Salt River Valley Water Users Assn.**

CALIFORNIA

Hancock Chemical expects by next Fall to double the capacity of its sulphur recovery plant in Wilmington, which now has a capacity of 130 daily tons.

COLORADO

Umbaugh Agricultural Chemical of Memphis, Tenn., are sponsors of soil tests, now underway of an estimated million acres of irrigated Colorado land. The sampling and resulting soil maps will show corrective treatment needed for ailing soils to bring them up to fullest productive capacity.

FLORIDA

Escambia Bay recently entertained some 250 technical men and plant superintendents from fertilizer concerns in the Southeast. **John Hardesty, USDA,** talked on trends in fertilizer processing; a panel discussion which followed included **C. T. Nixon, Ashcraft-Wilkinson,** moderator; Dr. Hardesty; **Dr. W. L. Prichett, U. of Fla.;** and Escambia Bay's own **J. H. Paul.**

The visitors were entertained at dinner the first evening, the technical meeting followed, and the event was concluded with a trip through the new plant. Escambia's vice-president, **D. J. Stark,** did the honors.

* * *

Florida East Coast Fertilizer was sponsor for a series of awards to South Dade County Future Farmers, presented for the top-ranking essays on soil conservation.

* * *

International Minerals and Chemical, have announced that the new facilities at Bonnie plant would be in production by July 1, six months ahead of schedule. They are designed to double the present output of dicalcium phosphate.

ILLINOIS

Bisbee Agrichemical Co., Chicago Heights, writes that its plant for the production of liquid fertilizer will soon be completed. Anhydrous ammonia and N solutions will also be handled, according to **Crosby L. Brownson.**

* * *

Smith-Douglass came in for some good local publicity recently when the Peoria Journal Star reviewed the "forward look" of Streator. Among the concerns contributing heavily to the progress of that community of 18,500 souls Smith-Douglass were mentioned as having quadrupled the capacity of their plant there during the past 5 years.

INDIANA

Shea Chemical's president, **Vincent** H. Shea, reports on the $5,000,000 expansion program, begun last August, and now 80% complete, with some of the new facilities already in full use.

Most important feature of the four-plant enlargement program is the addition of 140 percent to the firm's capacity for producing elemental phosphorus, Mr. Shea said. This permits doubling the firm's production of sodium phosphate and adding a third to its phosphoric acid capacity. He indicated that these steps would permit a growth in sales from about $10,000,000, expected this year, to more than double that figure in 1957.

At Columbia, Tenn., where the firm produces phosphorus, it is both constructing a new phosphorus furnace and enlarging the present one. Combined production is expected to yield about 45,000 annual tons of elemental phosphorus. To accomplish this, it was necessary to acquire additional reserves of phosphate rock, and to triple the size of some facilities used to receive, store and nodulize the essential material.

Mr. Shea believes the new furnace will be the largest in the

Four new granulating unit installations have been announced by Blue Valley Equipment Manufacturing & Engineering Company of Topeka, Kansas. Single units were installed for the Robert A. Reichard Company, Allentown, Pennsylvania; Dorchester Fertilizer Company, Dorchester, Maryland; Deep Root Fertilizer Company, Olathe, Kansas; and a double-capacity unit installed for G.L.F. Soil Building Service in Big Flats, New York.

The granulating unit installed for the Deep Root Fertilizer Company, was in conjunction with a new plant completely designed and engineered by Blue Valley engineers for the manufacture of modern granulated fertilizers.

With this announcement of four new units, the Blue Valley company now has a total of 27 granulating units installed. Twenty-five are installed in the United States, and two double-capacity units are installed in Canada.

Also, Blue Valley has announced a new customer service program. On-the-job starting of granulating units and the training of personnel in the art of granulation, has now been made available to Blue Valley customers, without any additional cost.

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- **Plant Modernization Programs**
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phosphorus industry. Features include a 42,000 KVA transformer; the utilization of 45-inch graphite electrodes; and a precipitator of new design.

Simultaneously, equipment to granulate and move by-product slag as a slurry, is being installed. Approximately 1200 tons of slag will be moved each day about a half-mile by this process. In addition, facilities have been installed permitting the utilization of valuable off-furnace gases and for further increasing the size and efficiency of equipment for scrubbing waste gases and dusts.

At Dallas, Texas, the Shea organization is constructing a plant for utilizing elemental phosphorus in the production of sodium phosphates and phosphoric acids. Designed to produce 60,000 annual tons, construction was started in February. Preliminary work, including the construction of office and warehouse buildings, has been completed and the installation of basic machinery and construction of the major plants are now underway. Completion and initial operation in October is expected.

At Adams, Mass., the firm's expansion program called for facilities for research and pilot plant operations in the field of organic chemicals. This work was completed in December. Production of organic chemicals on a pilot plant basis has been underway for several months.

At Jeffersonville, Ind., the expansion program included purchasing 15 acres for ultimate plant enlargement and enclosing major production facilities. Final stage, now underway, is the paving of roads and plant-work area.

KENTUCKY

Elkton Ammonia Inc., has been chartered by Rudolph Hall, H. E. Murrey, Earl Welborn, Jr.

LOUISIANA

Union Oil and Gas Corp. are considering Eunice as a site for a $4,000,000 plant to recover liquid hydrocarbon from the concerns gas. And, according to the local Chamber of Commerce, a $7,000,000 plant is projected for the same community to produce 150 daily tons of anhydrous ammonia.

* * *

Petroleum Chemicals, Lake Charles, has awarded construction of its $12,000,000 ammonia plant to **The Foster Wheeler Corp.**

MAINE

Canada Packers will expand its Presque Isle plant with a new $150,000 structure.

MARYLAND

Davison Chemical reports completion of their $1,200,000 improvement and expansion program, affecting three fertilizer plants:

At Alliance, Ohio; Perry, Iowa, and Curtis Bay (Baltimore), Maryland, facilities have been installed for production of an improved type of granulated fertilizer. The process is characterized by positive heat control and use of ingredients in economical solution form. These include phosphoric acid and nitrogen or urea solutions.

"In addition, the process enables production of higher analysis fertilizers—that is, fertilizers which bear a high proportion of plant nutrients, up to those in the 15-15-15 range.

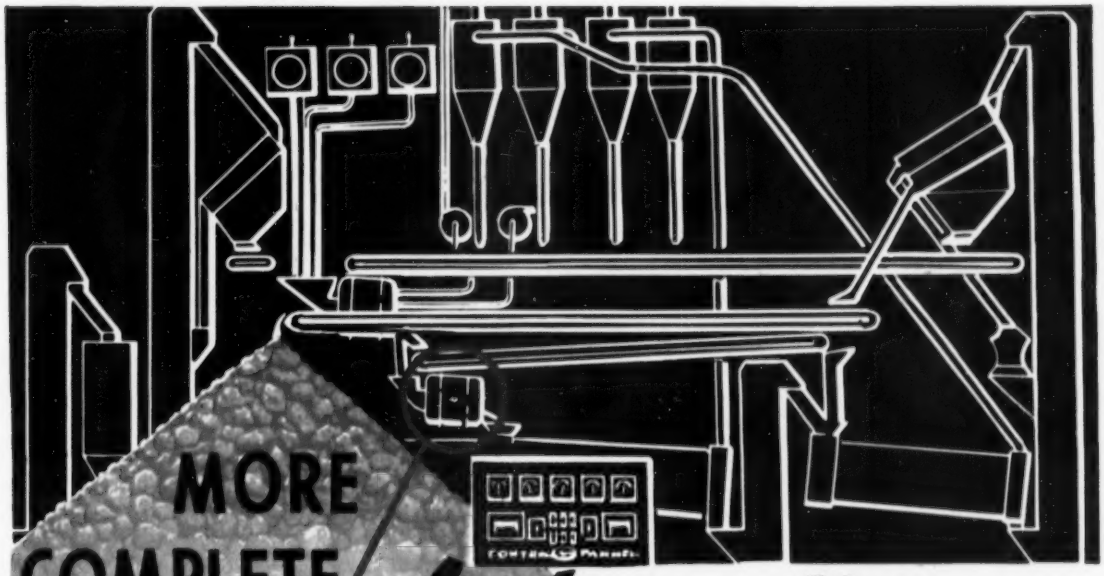
"Fertilizers in granulated, rather than ground, form are increasingly favored by farmers. With Davison's new process, the product is of graded particle size, free of dust. It does not blow in the wind and can be applied evenly. It gives up its nutrients at a regulated rate and resists caking in storage."

MINNESOTA

International Minerals & Chemical will build a factory for the production of chemical plant food mixtures at Fairfax, **Maurice H. Lockwood,** vice president in charge of the corporation's plant food division has announced. Construction will begin shortly.

"Consumption of chemical plant food in Minnesota has shown a substantial increase during recent years, and even greater increases are indicated for the future to provide high yields and more economic production costs for such regional crops as corn, soy beans, small grains, and vegetables," Mr. Lockwood said. "Livestock in the region, also important in the agricultural economy, consumes large quantities of hay and pasture as well as corn and some other feed crops."

The new plant at Fairfax will provide additional plant food in the area and will place International in a better position to supply its present customers, as well as to serve a more extensive area surrounding Fairfax in south-central Minnesota. Currently, International serves the



MORE COMPLETE *Automation* IN *Granular*

MIXED GOODS PROCESSING WITH SACKETT "TUNED TO THE TREND" METHODS

Even before the turn of the century, the Sackett Organization was busily engaged in blazing new production trails, many of which have since been followed and accepted as manufacturing standards by the Fertilizer Industry. The fact that our interest in pioneering, over the years, has not lessened is borne out by the fact that the Sackett Organization holds more patents on fertilizer production equipment and methods than all other such manufacturers combined. The late link in this ceaseless effort is the Sackett STAR* Granulator, which is now on the threshold of revolutionizing all existing methods of granulating fertilizers.

Established fertilizer producers are invited to get our up-to-the-minute counsel on their conversion and expansion programs. It is available without cost.

*U. S. and Foreign Patents Pending

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Fairfax area from its plant at Mason City, Iowa, where the company's facilities include a modern contact sulphuric acid plant and a superphosphate manufacturing unit, as well as a fertilizer mixing plant.

The Fairfax plant will be in operation for the Spring 1957 season, and will be in the group directed by area manager **J. W. Hicks** at Mason City, Iowa.

* * *

St. Paul Ammonia Products' Pine Bend plant may be in production by the first of the year, according to general manager **Frank W. Wilson.** As our readers know, this is a $16,000,000 liquid fertilizer plant, engineered by **Lummus,** whose output is to be marketed by **Central Farmers Fertilizer,** Chicago. Mr. Wilson is a veteran in the "ammonia business" having been with **duPont** for 15 years, and more recently with **Olin-Mathieson.**

MISSOURI

Hudson Chemical is expanding its power spray and crop chemical divisions and has bought a building in St. Louis.

* * *

St. Regis Paper formally opened its new 100,000 square foot multiwall bag plant in Kansas City June 21, with the mayor and president of the Chamber of Commerce as featured luncheon speakers. **Kenneth D. Lozier** presided. After the luncheon the guests were transported to a tour of the plant, followed by an open house for invited guests at the Muehlebach Hotel.

NEBRASKA

Chemical and Industrial Corporation has been awarded the contract to design and construct the new nitric acid facilities at Omaha for **Allied Chemical & Dye's Nitrogen Division.** This installation, scheduled for initial operation early this summer, will not increase basic nitrogen capacity but will permit the production of fertilizer solutions of the ammonium nitrate and ammonium nitrate-urea types, marketed under the trade names Nitrana, Urana, and Uran.

NEW YORK

Terraco, Inc. has been incorporated in a New York City deal in fertilizer and by-products. Directors: **Bernard R. Jankoff, Stanley J. Dorman** and **Josephine Novers,** all of 521 Fifth Avenue.

Green Thumb Garden Chemical Corp. has been incorporated by Myron N. Steinberge, 42 Broadway, N.Y.C.

* * *

Olin-Mathieson reports that the rock fall at Niagara never interrupted their operation for even a second. The power company cutover to other power supply sources is so well organized that the major loss of a $100,000,000 power plant caused minor industrial effects in the area.

* * *

Union Carbide's mineralized plant food is being distributed by **Vital Earth Corp.**

* * *

Valley Hill Chemical's blending plant at Jackson will soon be turning out its 125 daily tons.

PENNSYLVANIA

Koppers Co. announces it will purchase 175 acres near Monroeville where it will build a multi-million research center, to house facilities for research which they expect to triple in the next decade. Construction will take place over a period of years as needed.

TENNESSEE

The Flintkote Co. are planning a gypsum plant at Sweetwater, as part of a $20,000,000 expansion program, largely in building materials.

TEXAS

John W. Therrell Jr., nursery operator, has offered to build a sludge fertilizer plant for Fort Worth, and pay the city $1 a ton after the plant has been paid for by output.

UTAH

Delhi-Taylor's potash mining and beneficiation project at Moab is in process of being financed. It is estimated at some $20,000,000.

WEST VIRGINIA

Olin-Mathieson are in operation with their new experimental unit for the production of synthesis gas by partial oxidation of coal at Morgantown. The pilot unit will turn out enough gas to manufacture 80 daily tons of ammonia or the equivalent methanol. The unit is the first ever built of this size and shape, and while it is experimental, its size is the same as anticipated future units for commercial operation.

* * *

M. B. Wright, manager of the O-M Morgantown ammonia plant which now operates on gas from coking coal, believes the new process will replace the coke process, and strengthen the O-M position in competition with natural gas or petroleum plants.

The process to be used was developed by **Texaco.**

AFRICA

Fisons, Ltd which already has plants in Cape Town, Durban, Lusaka and Daggafonein, plans another at Sasolburg to cost about $10,000,000 and will be the largest fertilizer works in that part of South Africa. They plan production of up to 200,000 annual tons of superphosphate and up to 300,000 annual tons of mixed goods. They may also produce sulphuric acid and nitrogen.

* * *

Sukulu Mines Ltd., a new company at Suku, Uganda, capitalized at some $3,400,000, has been formed jointly by **Olin-Mathieson, Frobisher, Ltd.,** and the **Uganda Development Corp.** For the present they will concentrate on phosphate rock, but if the market for niobium pentoxide develops to warrant the move they are in position to exploit the large niobium deposits there along with the apatite.

* * *

Southern Rhodesia's Salisbury is the site of an $8,400,000 superphosphate plant, which should provide all the demand in Rhodesia and Nyasaland.

AUSTRALIA

Shell and United Carbon will build near the present Shell plant at Geelong, Victoria, a $5,000,000 carbon black plant.

BRAZIL

Sogiedade Industrial de Minerais e Acidos will import equipment from Germany for a 120 daily ton sulphuric plant at Ouro Preto which is due to be in production by early next year.

CANADA

North American Cyanamid, whose several expansion projects have been reported here in May and April issues are now building at the recently expanded Welland plant, which produces ammonium nitrate and nitrogen solutions for their agricultural products division, facilities which will triple by 1957 their production of amino triazole, a new herbicide and defoliant chemical.

* * *

Jefferson Lake Sulphur's Canadian subsidiary will build a sulphur plant at Fort St. John, B. C.

* * *

R. Campbell & Associates, Vancou-

ver, have a withdrawal permit on 300,000 acres of potash land in Saskatchewan.

ENGLAND

Shell's Woodstock Agricultural Research Center in Kent, which cost nearly $500,000, excluding equipment, was recently opened and made the headquarters of Royal Dutch Shell research on pesticides and herbicides. A whole wing is set aside for **Sir Robert Robinson** and his team of chemists.

JORDAN

Jordan Phosphates, with the arrival of 200 new freight cars from Belgium will be able to up its production to 300,000 annual tons of phosphate rock . . . with an ultimate goal of 2,000,000 annual tons forecast.

ISRAEL

Electrochemical Industries has gone into operation with a $3,000,000 plant which is producing insecticides, fungicides including BHC, lindane, copper axychloride and formulating into dusts, wettable powders and emulsions. They also produce 3,000 tons each of chlorine and caustic soda. The plant was half financed by **American Electrochemical Industries, Inc.,** formed for the purpose in Cleveland, O., by a group of American business men.

MEXICO

Freeport Sulphur is actively searching for Mexican sulphur as the $3 tax threatens to make it "difficult, if not impossible," to develop Louisiana's deposits.

* * *

Gulf Sulphur has gone into production with its new agricultural chemical processing plant and distribution center at Navojoa, Sonora.

PUERTO RICO

Gonzalez Chemical Industries Inc., San Juan, have ordered two specially designed barges to be built by **Dravo Corp.** at their Ohio River yard, which will be completed this Fall. They will serve the new plants Gonzalez are building to produce sulfate of ammonia, anhydrous ammonia, sulphuric acid and other products.

VENEZUELA

Blaw-Knox are engineering plants along the coast which will produce 150,000 annual tons of fertilizer when completed in 1957 at an estimated cost of $45,000,000. The Government is sponsoring 11 new plants.

CHANGES

Virginia-Carolina Chemical stockholders will hold a special meeting July 18 to resolve the controversy concerning the Board of that company and, as the call states, to afford them "the opportunity to remove and replace any directors whose presence on the board they feel is not in the best interest of the company." The call was issued by **Joseph A. Howell,** company president.

CF

Fulton Bag & Cotton Mills has been purchased from the Elsas family for nearly $10,000,000 by a group of industrialists headed by Shuford & Associates of North Carolina, the group approved by the stockholders two months ago. A new board was elected, which in turn re-elected the majority of officers.

The new board chairman is Julius W. Abernethy of Newton, N. C. Other directors are David Berdon, Herbert L. Werner and Jay Levine of New York City; I. T. Cohen of Atlanta (attorney for the Shuford group); Thomas L. Kaplin, Toledo, Ohio; Joseph Karp, Cincinnati, Ohio; Bernard A. Mitchell, Chicago; Moses Richter, Mt. Gilead, N. C., and A. A. Shuford, Jr., Hickory, N. C.

Officers reelected include Robert O. Arnold, president; Jason M. Elsas, vice president and general manager of the bag division in New Orleans; Norman E. Elsas,* vice president and general manager of the mill division, and Clarence E. Elsas, vice president and general manager of the fabrics division.

F. G. Barnet of St. Louis and E. Monroe Hornsby of New York City were reelected vice presidents. The board also elected E. A. Cronheim, assistant secretary, and George L. Brogdon, assistant treasurer.

Richter was named treasurer and vice chairman of the board, while Mitchell became secretary and chairman of the executive committee.

Abernethy said, "We purchased this company because of its splendid reputation and excellent management.

"It is our desire to continue and expand its nationwide operation."

Fulton Bag was founded in Atlanta in 1868 when Jacob Elsas, a German immigrant, established a small plant to make paper and cotton bags.

Today, the company operates plants in Atlanta, New Orleans, Los Angeles, Denver, Dallas, St. Louis, Minneapolis, Kansas City, Kan., and Savannah.

Some of its 4,000 employes also

*Norman Elsas has since resigned, in order to devote full time to a company which markets several of his inventions.

Aerial view of Stauffer's Tampa insecticide plant where the new building has been completed and houses the Southeastern Regional Sales headquarters, transferred from Apopka where warehouse stocks will continue to be maintained. Insets show:—Henry Hansen (upper left) Tampa plant manager and Melton Pearson, Southeastern salesmanager, agricultural chemical division.

are located in sales offices in New York, San Francisco, Chicago, Oklahoma City, Winter Haven, Fla., and Phoenix, Ariz.

Headquarters will remain in Atlanta.

CF

Union Bag & Paper, New York City and **Camp Manufacturing,** Franklin, Va., have come up with an agreement in principle by their respective directors for the combination of the two paper companies. Either merger or the purchase of Camp by Union; in either case Camp shareholders would receive 1.75 shares of Union for each share of Camp held. A special meeting of stockholders will be called to approve. The new name would be **Union Bag-Camp Paper Corporation.**

CF

The **U.S. Potash-Pacific Coast Borax** merger plans have moved forward another step since our report here last month. The merger has been approved by the two boards of directors, subject to stockholder approval. The name of the merged company is to be **U.S. Borax & Chemical Corp.**

CF

Stauffer Chemical has acquired a 50% stock interest in **San Francisco Chemical** from **Mountain Copper Co.** No present change in management is contemplated. SFC operates a mine and benefication plant on Stauffer-owned claims in Wyoming, and its own open pit phosphate rock mining project near Montpelier, Idaho, and is one of the oldest phosphate mining concerns in that region. SFC some time ago teamed up with Stauffer in the development of the treble superphosphate plant at Garfield.

CF

Stauffer Chemical and **Corn States Hybrid Service,** Des Moines, have signed an agreement making Corn States service and sales agents of Stauffer's seed protectants east of the Rockies.

CF

Nitrogen Division has moved its Atlanta, Ga., office to 531 Candler Building, 127 Peachtree Street, N.E. Former address was 133 Carnegie Way.

CF

St. Regis Paper has moved its headquarters to the new Socony-Mobil building, 150 East 42d St., NYC, where it will occupy three entire floors. All divisions have moved to the new location. The new telephone number is Oxford 7-4400.

Personals

H. Leroy Thompson, formerly technical director of **Mississippi Chemical** and more recently manager of chemical research and development, **Southern Natural Gas Co.** has established his own office as consulting chemical engineer, 329 Brown-Marx Building, Birmingham 3, Ala. Phone ALpine 1-5801.

D. T. Morris who has been assistant sales director of Federal Chemical Company. Mr. Morris joined the company in 1941.

C. F. "Mud" Ireland, who has joined Southern Nitrogen to represent them in North Carolina. He has been with Borden as a chemist and in the Carolina area as agronomist and later as salesman for Allied Chemical and Dye.

Charles W. Goering who has joined National Potash Company as sales representative for the northeastern states. William B. Porterfield, Jr., vice president and sales manager, has announced.

* * *

Robert U. Haslanger has been appointed president of **Escambia Bay** Chemical Corporation, succeeding **Kenneth G. Donald** who resigned to devote his full time to his duties as vice president and treasurer of **National Research Corporation.**

Dr. N. C. Robertson, director of research, was appointed vice president.

The following officers were reappointed by the board of directors **D. J. Stark,** vice president; **J. H. Miracle,** vice president; **L. V. Tracht,** treasurer; **E. J. Freiberg,** secretary and **A. L. McClellan,** assistant secretary and assistant treasurer,

At the annual stockholders meeting the following were elected to the board of directors:

N. C. McGowen, chairman of the board and president, **United Gas; Ed Parkes,** executive vice president, **United Gas; George G. Walker,** president, Electric Bond and Share; **A. A. Talmage,** vice president, Electric Bond and Share; **R. S. Morse,** president, **National Research; K. G. Donald,** vice president, **National Research**; Mr. Haslanger, and **Saunders Gregg, United Gas.**

* * *

The appointment of **H. L. Martin, Jr., The American Agricultural Chemical Co.,** as general superintendent of maintenance, exclusive of the Phosphate Rock mines was announced by **B. R. Richey,** vice president in charge of production.

Mr. Martin was formerly division superintendent responsible for production of their Western division.

* * *

Herman Behme has been appointed to the position of eastern manager of the market development department of **Stauffer Chemical.** He joined the Stauffer organization in 1951.

* * *

Joy Manufacturing Company, Pittsburgh, Pa., has announced the appointment of **John P. Cartwright** as sales manager, industrial sales. Mr. Cartwright will headquarter in the company's general offices in Pittsburgh. He joined the Joy organization in 1950.

Spencer Service is Wonderful

"Look, Gnxerk - another Spencer rush order!"

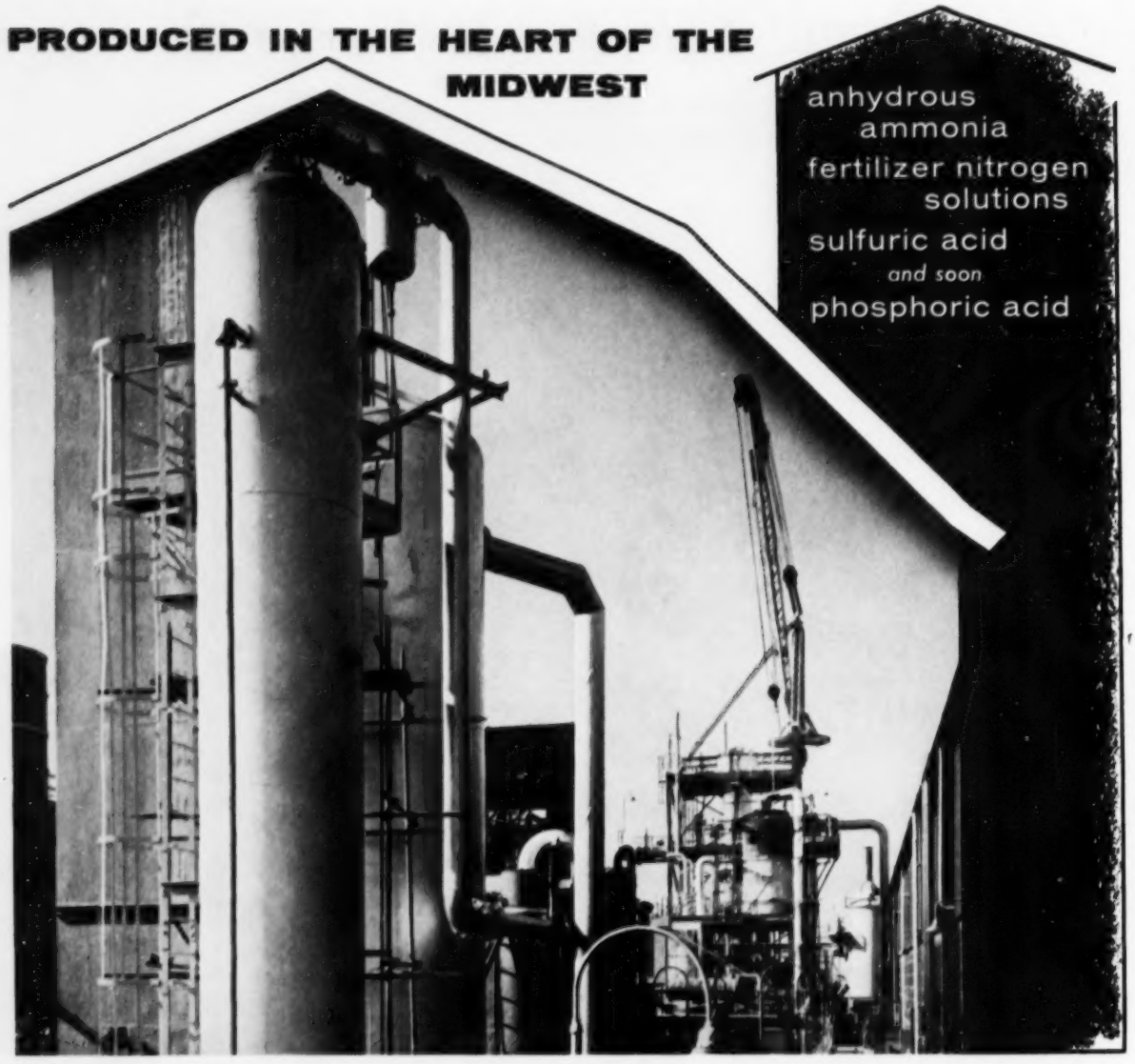
On time deliveries of SPENSOL solutions have helped to build Spencer's reputation for dependable service to mixers throughout the country.

SPENCER

America's Growing Name In Chemicals

SPENCER CHEMICAL COMPANY, Dwight Bldg., Kansas City 5, Mo. District Sales Offices: Atlanta, Ga.; Chicago, Ill.; Memphis, Tenn.; Works: Pittsburg, Kans.; Henderson, Ky.; Chicago, Ill.; Vicksburg, Miss.; Orange, Texas.

PRODUCED IN THE HEART OF THE MIDWEST



AT TUSCOLA, ILLINOIS – in the heart of the midwest farm area – U.S.I. produces a combination of agricultural chemical raw materials for fertilizer manufacturers.

Anhydrous Ammonia and Fertilizer Nitrogen Solutions From other U.S.I. affiliated plants at Tuscola, and from a natural gas reforming unit, hydrogen flows into the U.S.I. ammonia plant, where it is reacted with nitrogen to produce anhydrous ammonia and nitrogen solutions. Since the raw materials for this operation are produced internally, supply is steady, reliable and ample.

Sulfuric Acid U.S.I.'s 400 ton per day sulfuric acid plant produces all grades of virgin acids, including electrolytic and oleum, plus a good quality of process-spent acid suited to fertilizer manufacture. This plant operates year round, permitting U.S.I. to store during off-seasons for the large in-season agricultural demand. Other sulfuric acid plants are located at Dubuque, Iowa, and Sunflower, Kansas.

And Coming Soon – Phosphoric Acid U.S.I. is building a new plant at Tuscola to produce wet process phosphoric acid from phosphate rock and U.S.I.'s sulfuric acid. The plant is scheduled to go on-stream by the end of 1956. Design capacity will be 30,000 tons of P_2O_5 shipped as 75% phosphoric acid.

In the midst of the midwest farm area – where fertilizer demand is high and moving steadily higher – U.S.I. provides a single source for a variety of fertilizer raw materials. This source is a flexible one, since it is part of the company's chemical producing center at Tuscola. Other materials can be made for long-range demands.

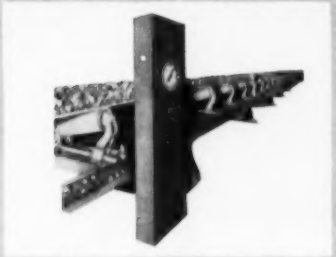
For further information, address your nearest U.S.I. office, or contact Chemical Sales, U.S. Industrial Chemicals Co., 99 Park Avenue, New York 16, N. Y.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers Products Corporation
99 Park Avenue, New York 16, N. Y.
Branches in principal cities

GRANULATING? COATING?

TECHNICAL DATA

CONVEYOFLO® METER: for any belt conveyed material . . . automatically paces auxiliary feeders . . . meters total plant output. For installation in existing conveyors . . . or furnished complete with conveyor unit.



BUILDERS CONVEYOFLO METER

Features: compactness, continuous integration, accurate response to load variations. Accuracy within ±0.4 of 1% of full scale over 10:1 range. Overload protection, automatic compensation, inherent explosion-proof design.

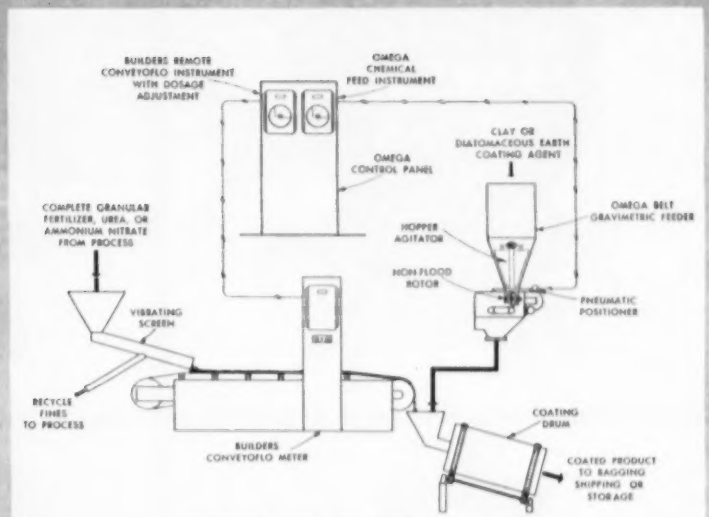
GRAVIMETRIC FEEDER: Accurate, rugged dry materials feeder for medium feed rates. Features: feed rates to 2 cu. ft./min.; accuracy within ±1% by weight over full 100 to 1 feed range; large weight-sensing section; no belt slippage or training; non-flood rotor;

OMEGA GRAVIMETRIC FEEDER

rapid rate setting; Sens-A-Gram controller; sampling gate optional.

RELATED EQUIPMENT for compounding fertilizers: ROTODIP LIQUID FEEDER — for feeding unrefined phosphoric acid in superphosphate production; HI-WEIGH BELT GRAVIMETRIC FEEDER — for continuously weighing and feeding medium to high rates.

"THE BEST COSTS LESS"


BUILDERS REMOTE CONVEYOFLO INSTRUMENT WITH DOSAGE ADJUSTMENT
OMEGA CHEMICAL FEED INSTRUMENT
CLAY OR DIATOMACEOUS EARTH COATING AGENT
OMEGA CONTROL PANEL
COMPLETE GRANULAR FERTILIZER, UREA, OR AMMONIUM NITRATE FROM PROCESS
OMEGA BELT GRAVIMETRIC FEEDER
HOPPER AGITATOR
NON-FLOOD ROTOR
PNEUMATIC POSITIONER
VIBRATING SCREEN
RECYCLE FINES TO PROCESS
COATING DRUM
BUILDERS CONVEYOFLO METER
COATED PRODUCT TO BAGGING SHIPPING OR STORAGE

B-I-F Equipment Proportioning Coating Agent to Hygroscopic Materials

CUT COATING COSTS THE Ω OMEGA WAY!

THE PROBLEM:

The current trend toward granulated fertilizers . . . based on multi-component formulas . . . makes it essential to select proper automation-type conveyor equipment to achieve the high compounding accuracies and production rates required. Also with the increased demand for higher and higher analysis granular plant foods, the need for a system which can properly and efficiently coat hygroscopic granules or prills with a parting agent (clay or diatomaceous earth) increases.

THE ANSWER:

Ω OMEGA MACHINE COMPANY, as a leading manufacturer of this type of equipment, has the design, manufacturing, and installation experience to help you increase the profit factor of your formulating process. *Coating costs can be cut* by the Omega performance-proved proportioning system . . . with coating material fed from the Model 50-8R *non-flooding*, gravimetric belt feeder to the product stream being weighed by Builders Conveyoflo®, and proportioned in accurately controlled ratio. Outstanding features on two such units which work for your benefit are listed under TECHNICAL DATA. Increase your competitive advantage by making your operation as modern as tomorrow!

ACT TODAY!

For Bulletins write **OMEGA MACHINE COMPANY**, 538 Harris Avenue, Providence, R. I. . . . division of . . .

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PROVIDENCE, RHODE ISLAND

B·I·F METERS FEEDERS CONTROLS

BUILDERS IRON FOUNDRY • PROPORTIONEERS, INC. • OMEGA MACHINE CO. • BUILDERS-PROVIDENCE, INC.

Four leading forms of Nitrogen

Commercial Solvents Corporation produces and supplies fertilizer manufacturers with four important forms of nitrogen. The three liquid forms are widely used for the preparation of high-analysis fertilizers and for the ammoniation of superphosphates. Exclusive, granular CSC Ammonium Nitrate fertilizer is distributed solely by fertilizer manufacturers. This high-quality, uniform product is manufactured at Sterlington, Louisiana. Adequate storage facilities assure prompt shipments and service. For complete information including Technical Data Sheets, write Agricultural Chemicals Department, Commercial Solvents Corporation, 260 Madison Avenue, New York 16, New York.

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CSC
AGRICULTURAL CHEMICALS

NITROGEN THE HEART OF THE HARVEST

Succeeding him as Washington district manager is **Arnott J. Lee,** who joined the company in 1934.

* * *

John W. Hall has been appointed vice-president in charge of sales of **Potash Company of America,** as a director of the company to succeed the late **George E. Petitt.**

* * *

John E. Fletcher has become Sales Manager of the **United States Potash Company.**

He had been in their sales organization since 1949.

* * *

Dr. Karl S. Quisenberry has been named to succeed **Dr. A. H. Moseman** as director of crops research in the **U. S. Department of Agriculture's** agricultural research service, effective July 1. **Dr. Marion W. Parker** will replace Dr. Quisenberry as assistant director.

* * *

E. Wm. Eipper has been appointed to the position of director of the market development department, according to an announcement by **Dr. C. L. Arnold,** vice-president in charge of research and development, **Stauffer Chemical Company.** Mr. Eipper joined Stauffer in 1954 as Western Manager of Market Development.

* * *

Commercial Solvents has announced the appointment of **Hans M. F. Fischer** as assistant to W. Ward Jackson, vice president in charge of the Company's Petrochemicals division. Mr. Fischer joined Commercial Solvents in 1933.

* * *

Retirement of **Richard V. Bradley, Chase Bag Company** sales manager for paper mill products, has been announced by **W. N. Brock,** vice president and general sales manager. Mr. Bradley, who is well known throughout the paper industry, became associated with Chase Bag in 1934. Mr. and Mrs. Bradley will locate in New Zealand.

* * *

E. P. Withers has been made manager of the specialty products and maintenance department of **Davidson-Kennedy Co.,** Atlanta. He has been with them 13 years.

* * *

Howard L. Cromwell has been appointed plant manager of **Stauffer's** Freeport, Texas, operations. He joined them in 1947.

William Reed Morgan, who has been elected vice-president-sales for Hydrocarbon Products. He has been 10 years with International Minerals and Chemical.

A. E. New is now director of the technical department of Escambia Bay at the plant in Pensacola, Fla.

* * *

Dr. Marvin A. Brooker has been appointed Dean of the U. of Florida college of agriculture, and **Joe N. Busby** is assistant director of the State AES.

NAC Meeting Sept. 5-7

The National Agricultural Chemicals Association will hold its 23rd Annual Meeting in The Essex and Sussex, Spring Lake, New Jersey, on September 5, 6 and 7, L. S. Hitchner, NAC executive secretary, has announced.

Dr. Alfred Weed, John Powell & Co., division of Olin Mathieson Chemical Corporation, Baltimore, Md., will be chairman of the program committee for the three-day annual meeting, Mr. Hitchner said.

OBITUARIES

George E. Petitt, vice-president Potash Company of America died June 9.

Raymond B. Trueman, 73, president Trueman Fertilizer Co., died May 19 at his home in Jacksonville, Fla.

Thomas Herbert Bonner, 63, died suddenly at his mother's home in Lineville, Ala. He was for many years state educational manager and agronomist in Georgia with Chilean Nitrate Educational Bureau.

G.P.F.E.S. Plans Three July Meetings

Griffin, July 10, Athens, July 11, Tifton, July 13 is the schedule of the Summer meetings held annually by the Georgia Plant Food Educational Society, according to word from Secretary-Treasurer J. Fielding Reed. Speakers who will make the tour are Extension Agronomists J. R. Johnson, Ralph Wehunt and Jim Bergeaux. George King, director of the Georgia AES will talk on fertilizer potential created by research, A new system of grade reporting in Georgia will be discussed by Paul Jolley, Chief of the State's fertilizer division. The forum will be under the guidance of L. W. Eberhardt, Jr., assistant director, AES. The local district vice-president of the Society will preside, each in his own bailiwick.

Edisto to Host Tour July 12

A tour of Clemson's Edisto branch will be held July 12th, to observe experiments on rates of nitrogen on summer pastures, cantaloupe and sweet potatoes, corn, cotton and various other fertilizer experiments. All fertilizer manufacturers, salesmen and dealers operating in South Carolina are invited.

Phillips Launches 56-57 Sales Program

Approximately 80 Phillips Petroleum Company fertilizer sales representatives attended a three-day meeting at the Shamrock-Hilton Hotel in Houston, Tex., June 18-20, to hear plans for the company's 1956-57 fertilizer sales program.

Representing all of the sales divisions in Phillips national marketing area, as well as Mexico, fertilizer salesmen during their three-day meet heard discussions on supply, manufacturing schedules, and sales outlook in the fertilizer industry.

While in Houston, the Phillips salesmen were guests of the Houston Chamber of Commerce on a boat trip along the Ship Channel and also toured Phillips anhydrous ammonia, ammonium sulfate, and triple superphosphate fertilizer plants at Adams Terminal.

The meeting closed with a dinner in the Shamrock-Hilton's Castilian Room, at which E. H. Lyon, Bartlesville, Okla., general sales manager for Phillips, was the principal speaker.

Arrangements for the meeting were under the direction of L. H. Wright, manager of Phillips fertilizer sales.

RESEARCH RESULTS & REPORTS

How Plants Get Phosphorus

Phosphate nutrition of plants is a complicated process in which both plant and phosphorus are pawns of another soil unit, the hydroxyl ion.

USDA research shows plants can't take up all forms of soluble phosphates that are within reach, as most scientists have assumed. Actually, plants absorb two forms—the di-hydrogen and the mono-hydrogen phosphate ions. These ions are not equal in effectiveness, generally not equal in supply. That's where hydroxyl ions enter the picture. Depending on their abundance in the root zone, hydroxyls dictate how much of the total phosphates shall be in each of these forms that are usable to plants.

Hydroxyls exercise dominance in another way, too. They interfere with a plant's absorption of phosphate ions—compete with them or block them off from the plant root. So, in a sense, the hydroxyls seem to work at cross purposes by impeding the uptake of ions e v e n while boosting the plant's supply of usable ions.

The hydroxyl ion is one atom of oxygen plus one atom of hydrogen linked together as a chemical unit. The hydroxyl-ion concentration of a substance is reflected in pH value —a measure of acidity and alkalinity. Therefore, a growing-medium's acidity or alkalinity greatly influences the supply of usable phosphorus and its rate of uptake by the plants.

Biochemist C. E. Hagen and plant physiologist H. T. Hopkins, of ARS, found out how hydroxyl concentration regulates phosphate absorption by plants. This was shown by barley roots growing in solutions of known phosphorus content and pH value.

In the first place, by a series of reactions, the hydroxyl ion breaks into progressively simpler substances the more complex forms of phosphate material that may be present. That's symbolized in diagram below. At each reaction, the hydroxyl ion removes one of the phosphate's hydrogen atoms to complete a molecule of water (H_2O). Orthophosphoric acid (H_3PO_4) can arise from weathering or decay of the phosphorus-bearing rock, apatite, and become subject to this series of reactions. It is changed progressively to the di-hydrogen phosphate ion (H_2PO_4), mono-hydrogen phosphate ion (HPO_4) and simple phosphate ion (PO_4). Any ion removed or lost from the root zone is replaced by such reactions.

How far this progression goes depends, again, on hydroxyl ions—how great their concentration is. In an extremely acid soil with limited hydroxyl supply, much of the soil phosphorus is in a form not available to plants. At the medium-acidity levels with relative abundance of hydroxyls, available phosphates are relatively abundant—mostly di-hydrogen phosphate and little in mono-hydrogen form. Under neutral conditions, the mono- and di-hydrogen ions are in about equal amounts. But at alkaline levels with tremendous hydroxyl supply—thousands of times as much at pH 8 (moderately alkaline) as at pH 4 (extremely acid)—the supply is essentially all in mono-hydrogen form.

These findings, together with the observation that all plants aren't equally efficient in taking up orthophosphate, may help explain why, with our existing soils, we have the kinds of plants we do have. Some need only di-hydrogen phosphate, but in abundance. Some are self-sufficient with a trickle of the mono-hydrogen form. And others t h r i v e only with reasonable amounts of both.

A Major feature of hydroxyl ions' dominance over phosphorus nutrition is that they compete with or block access of phosphates to plant cells (AGR. RES., December 1954, p. 6). In explanation, the plant's limited facility for absorbing ions is apportioned among several definite ion groups. A group's allotment is shared in proportion by that group's ions present—but not by ions of other groups. Potassium, rubidium, and cesium form one such group, for example, and compete with each other.

Surprisingly enough, Hagen and Hopkins found that plants treat the dihydrogen form and the mono-hydrogen form of phosphate as members of separate groups—permits neither to use any part of the other's entry quota. Even more surprising, the study showed that the hydroxyl ion compete with both phosphates. The more abundant the hydroxyl ions are—that is, the higher the pH value—the less the phosphate uptake.

Random NOTES & QUOTES

Sulphur tax: Louisiana is on the verge of a tripled tax of $3 a ton. As Freeport Sulphur mines 95% of the Louisiana production this is chiefly a tax on them. No wonder they are actively searching for Mexican sulphur (See Map) in the event the tax makes it "difficult, if not impossible" to develop further in Louisiana.

RN&Q

Familiar is the battle going on in Florida over the "pull and treat" program to combat the nematode. Cattlemen will remember how some stood over their herds with shotguns when it became vitally necessary to destroy diseased stock before they infected whole herds. A case is now heading for the Florida Supreme Court to test the right of the State Plant Board to pull up trees, treat the soil—and get it ready for later replanting. The complainants want an injunction because they say there's no proof a nematode ever killed a tree, and challenge the board to prove it is doing the right thing.

RN&Q

City sells fertilizer. Oakland, Cal. park department is putting up signs on its lush downtown park lawns which tell the public what kind of fertilizer was used, how often and how much. The fertilizer dealers of Oakland should put up a monument . . . and fertilizer dealers elsewhere should encourage their own city fathers to do likewise.

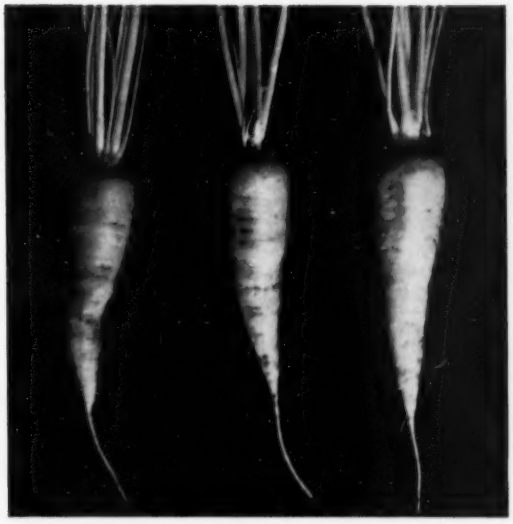
RN&Q

Electronicide. Down in Brazil they are beginning to use a gadget that fights insects with short waves without poisons of any kind.

RN&Q

Radiripening. An Army QM chemist predicts a method for instant, artificial ripening of green fruits and vegetables through radiation . . . no canning or freezing, it was revealed at the American Chemi-

IN CARROTS, POTASH-ENRICHED FERTILIZERS MAKE THE DIFFERENCE



with sufficient potash

without sufficient potash

Healthy, vigorous plants are the reward of the farmer who keeps his soil enriched with balanced fertilizers. Potash in these balanced fertilizers increases crop resistance to disease and produces a larger yield of finer quality crops.

USP's high-grade muriate of potash has the highest K_2O content and is free-flowing and non-caking—important advantages in the manufacture of these modern fertilizers which help American farmers to better crops and better incomes.

HIGRADE MURIATE OF POTASH 62/63% K_2O
GRANULAR MURIATE OF POTASH 60% K_2O MIN.

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INCORPORATED

30 Rockefeller Plaza, New York 20, N. Y.

Southern Sales Office
Rhodes-Haverty Building, Atlanta, Georgia

Here's where they meet and here's the program planning committee. Two excellent reasons why those who attend will thoroughly enjoy the Southwestern Fertilizer Conference and Grade Hearing, July 18-20 at the Buccaneer Hotel, Galveston, Texas. The speakers include B. W. Threadgill, Technical Service, Memphis. Dr. Russell Coleman, NPFI; Dr. Arthur E. Smith, economist from Dallas. There will be a social hour Wednesday evening; entertainment for ladies and men all Thursday afternoon, winding up with a dinner that night; and on Thursday the grade hearing, with Arkansas, Louisiana, New Mexico, Oklahoma and Texas control officials cooperating.

The Galveston beachfront is a mecca for more than a million visitors a year and includes the famous $2,000,000 Pleasure Pier.

The members of the Planning Committee, shown here are: Mrs. W. S. Tyler, W. S. Tyler, Longhorn Construction Co., Mrs. Jack Lindsey, Dr. J. F. Fudge, Texas State Chemist, Jimmy Powledge, National Hotel Company, Mrs. Stanley Hackett, Stanley Hackett, Dixie Fertilizer Co., Mrs. J. D. Dawson, J. D. Dawson, Fidelity Chemical Corp., Mrs. Harold Trammell, Harold Trammell, Farmers Fertilizer Co., Mrs. J. F. Fudge. Not shown but on the committee is Jack Lindsey, Potash Division, International Minerals & Chemical Corp.

cal Society meeting recently.

RN&Q

Mobile converter. A device that rolls on a short trailer and can convert a tank car of anhydrous into aqua ammonia in four to seven hours, right on the spot, has been developed by J. C. Carlile Corp., Denver. Just spot the tank car where you need the aqua . . . and no more storage problems! But what about demurrage on the tank cars?

RN&Q

No danger from potash mine dust, the New Mexico State Health Department asserts after a survey which indicates that the potash dust a miner breathes is no more than he would get inside him from eating an apple—and potash dust is soluble.

RN&Q

Red tide just about ruined Tarpon Springs, Florida, leaving nothing much there except the place where they make exquisite pastry. But a considerable array of industry has come in, including Victor Chemical's elemental phosphorus plant which operates around the clock on a seven day week.

RN&Q

Plastic film as a mulch we can understand better after reading an ad about it to keep damp out of basements. Seems a dirt basement gives off terrific gallonage of moisture, rotting the sills and beams. So it stands to reason that if polyethylene plastic will help a basement it will help a plant.

RN&Q

N research will produce a report on the effect of anhydrous ammonia on Maine crops and soils . . . which is about the farthest north for a fertilizer mode that started only a few years ago on the Gulf Coast.

RN&Q

Maintenance papers and summaries of round table discussions held at the recent Plant Maintenance and Engineering Show are now available as a book that answers 1100 specific questions. It costs ten bucks from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Speaking of which, Hyster's president, Ernest G. Swigert talked at the 1956 meeting on the saving that lies in efficient handling of material. "The increase in over-all efficiency that comes from letting machines do the work is hard to measure but it is a very real factor," he said among other things.

RN&Q

Gibberellic acid has no relation to gobbledygook. USDA reports that it does amazing things when applied externally to the stems of young plants in a lanolin paste mixture. They grow as much as 3 times taller than untreated plants. But not all plants. It retards some of them. Oh well, you can't have everything!

RN&Q

Honors were heaped by 250 to a man in Chillicothe, Ohio. They gave him a scroll, $300 and praise "for the understanding between rural and urban people you and the Extension Service have developed. Not a brass hat,—just a hard working man who for 30 years had been county agent in those parts. . . . Fred R. Keeler . . . may his tribe increase.

RN&Q

California Fertilizer Association sends out some pretty fine bulletins. The latest points out that California land, in spite of the high phosphorus content when it was virgin is now annually more needful of phosphate fertilization.

RN&Q

Alabama farms, P. O. Davis of the AES points out this year can profit by increasing fertilizer applications 100% for pasture, 40% for corn, 30% for cotton, 20% for peanuts. He also mentions that fertilizer prices are only 152% of the 1935-39 average, while farm wages are at 431% and various other farm needs range from 205% for farm machinery to 243% for building and fencing materials.

RN&Q

Florida is building a 520-acre horticultural unit near Gainesville for the AES to use in field work on fruit, vegetables and timber. That land they have had was poorly adapted, and there was not enough of it.

RN&Q

North Carolina has added one new grade to the approved list—6-12-4 for tobacco; and dropped three: 4-10-6, 12-12-12, 15-30-15.

RN&Q

Delta farmers, 300 in number, demonstrated the interest in irrigation in the Mississippi-Arkansas region by attending a meeting sponsored by a local dealer and Olin Mathieson where the importance and value of irrigation, properly planned and applied, were laid before them in no uncertain terms.

RN&Q

No respecter of persons, insects infest the garden of Connecticut AES entomologist, Neely Turner, the Station ruefully reports. Shoemaker's child was his garden for a while as he tried planting flowers unpopular with pests, but esthetics triumphed over the rocking chair—and now he grows what he wants,

CALL ARMOUR

Phosphate Rock
Triple Superphosphate
Superphosphate
Sheep Manure

31 FACTORIES AND OFFICES CONVENIENTLY LOCATED TO SERVE YOU

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WHY BE SATISFIED
with an Ordinary Bag Design?

Especially when an **Extraordinary*** bag design can give your product an important advantage in today's competitive fertilizer market. Such a design can tell the story—at a glance, pictorially—of the benefits your product gives the buyer.

** The kind we set as our standard at Percy Kent*

SINCE 1885

MULTIWALLS • COTTONS • BURLAPS
PERCY KENT BAG COMPANY, INC.
KANSAS CITY • MINNEAPOLIS • OKLAHOMA CITY
CHICAGO • BUFFALO • NEW YORK

Scratchboard drawing of our Kansas City plant . . . an excellent technique for bag printing. Do you like it?

and fights the bugs with the rest of us.

RN&Q

Chafers are back — the European Chafer that nibbles on the roots of grass and grain. So folks from greenskeepers to wheat farmers in New York State, anyway, are out there with the DDT, chlordane, dieldrin and other sprays and dusts—hopefully. You can get the whole story on the care and feeding of chafers from the New York AES at Geneva.

RN&Q

Crabgrass is a thing that when you ask an expert how to get rid of he tells you to move away. We therefore leaped at a story which said "New Chemicals Help Control. . ." Only to find that the relief is temporary. Among other things they say to water crabgrass with care and infrequently. But what do you do, Dr. Watson, when you have Bermuda trying its best to fight Crabgrass . . . and Bermuda needs water, too?

RN&Q

Clover declasse. We always liked clover. But now we are going to have to give it up. We learn that clover is not longer derigeur for the well-dressed lawn. The practical reason is that clover is subject to antracnose infection, snowmold and 2,4-D. So you won't find clover in your lawn mixtures any more! No more clover, no more four-leaf clover. Tough luck!

The B&L Coactor is a complete, self-contained liquid fertilizer processing unit, ready for installation needing only supply and delivery lines and wiring. It takes the raw material direct from tank cars and produces a neutral solution liquid fertilizer that can be stored in ordinary non-pressure black iron tanks. It is available in capacities up to 20 tons per hour. For details write Chemical Plants Division, Barnard & Leas Mfg. Co., Inc., Cedar Rapids, Iowa.

Nitrogen Division Releases Film

"How to Use Nitrogen Solutions" is the title of a new film just released by Nitrogen Division of Allied Chemical & Dye Corporation.

The new movie is the first on the use of nitrogen solutions for direct application and covers many phases of this fast-growing fertilizing method. Using a step-by-step approach, it tells how nitrogen solutions are handled, stored and applied. Many different types of applicators are shown in use on farms of the Midwest and South.

"How to Use Nitrogen Solutions" is aimed directly at the farmer and is designed to answer his most common questions about nitrogen solutions. Though educational in nature, it is light and easy to understand. Original ballad music lends an entertainment flavor.

The new movie runs 14 minutes and is 16 mm, sound and color.

Clubs, schools, companies and farm organizations may borrow a print at no charge by writing to: Nitrogen Film Department, 2nd floor, 205 East 43rd St., N. Y. 17, N. Y. Loan requests should be submitted at least three weeks in advance of planned showing time and should give first and second choice of dates.

NPFI Program On 1050 Stations

Four nationally-known authorities on subjects important to the fertilizer industry were heard on the National Plant Food Institute's thirteenth recorded Farm Radio News Service series over more than 1,050 stations in the past month. Each in the recorded series has set a new record for acceptability—from 304 stations when the service first was started to more than 1,050 using the present series. Speakers and their subjects for the thirteenth series were as follows:

Dr. E. C. Elting, Deputy Administrator for Experiment Stations, Agricultural Research Service, United States Department of Agriculture on: "Research Cuts Farm Costs."—A noted agricultural scientist points out that progress in research "has meant greater abundance and larger incomes for all of us."

E. T. Savidge, Deputy Manager, American Bankers Association, on: "Financing Soil Fertility." — A prominent bankers' executive emphasizes that "it is essential that we build our soil reserves .. . just as it is important for banks or other businesses to provide financial reserves against future needs and emergencies."

Oris V. Wells, Administrator, Agricultural Marketing Service, United States Department of Agriculture, on: "Building Markets for Farm Products." — A nationally-known marketing specialist reviews "three basic essentials to a solid, continuing market expansion for agriculture."

Dr. C. H. Wadleigh, Chief, Soil and Water Conservation Research Branch, Agricultural Research Service, USDA, on: "Banking on The Soil."—a leader in agricultural research points out that "when farm prices are low in relation to costs of production, good soil management becomes even more necessary than in easier times."

Control Officials To Meet in October

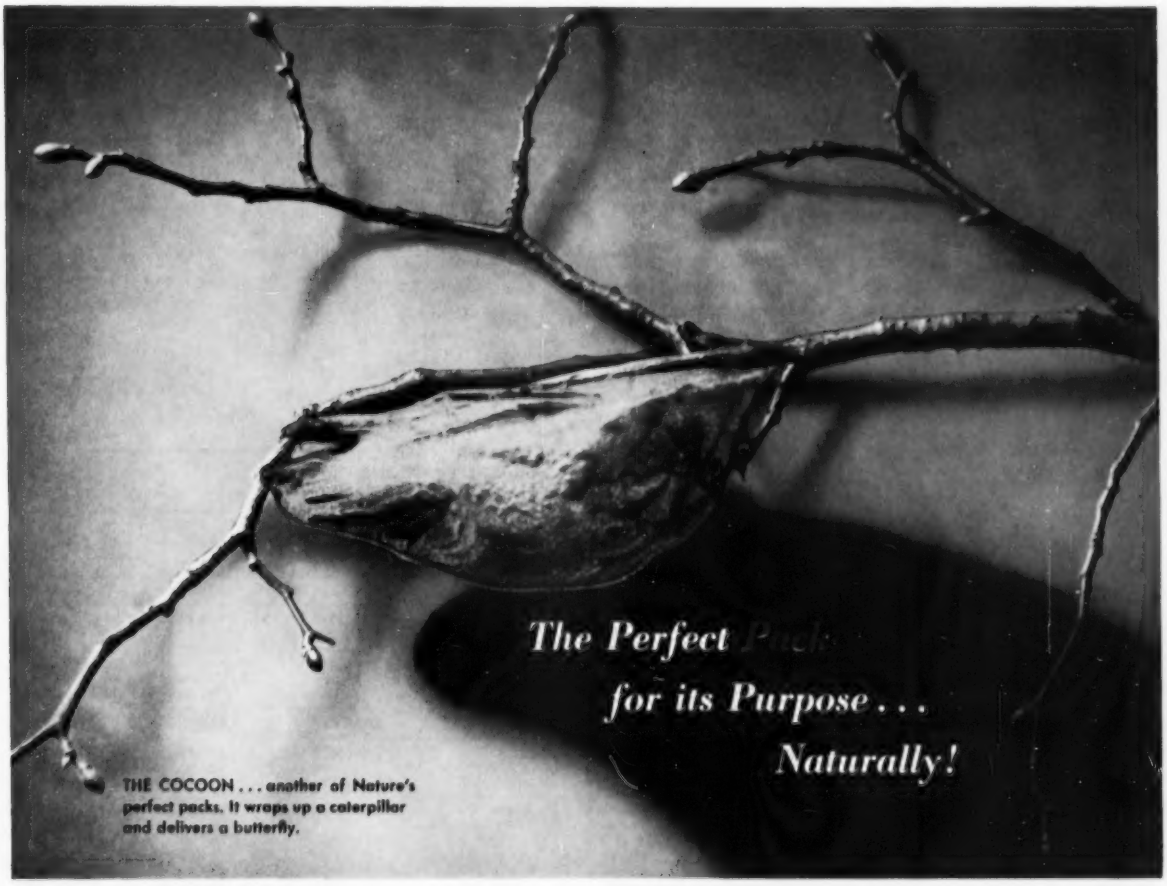
The meeting of the Association of American Fertilizer Control Officials is scheduled for October 18th, 8 p.m. and October 19th from 9 to 4 at the Shoreham Hotel.

Nitrogen Division Offers Formulation Pad Idea

A sample formulation pad for use in fertilizer mixing is being distributed free by the Nitrogen Division of Allied Chemical & Dye Corporation. Mixing companies can use the sample as a suggested design in making up their own formulation pads.

The Nitrogen Division formulation pad contains 90 identical forms which mixers can use in recording ingredients used in any given mixture. Inside covers of the pad carry three sets of tables: (1) detailed analyses of nitrogen solutions; (2) the number of pounds of each solution that must be used to add specified units of nitrogen; (3) the equivalent acidity or basicity of all commonly used nitrogen carriers.

A copy of the formulation pad may be obtained free by writing to: Information Department, Nitrogen Division, Allied Chemical & Dye Corp., 40 Rector St., N. Y. 6, N. Y.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For Calendar Year

NPFI Reports Consumption Decline of 1.3 pct. in '55

by WILLIAM S. RITNOUR, *Treasurer*
National Plant Food Institute

Fertilizer consumption in the United States during the calendar year 1955 was a near-record 20,416,410 tons, according to a study just completed by the National Plant Food Institute. This represents a decrease of 1.3 percent from the all-time record of 1954 when the revised estimate amounted to 20,679,026 tons.

Although total tonnage in 1955 dipped slightly from the preceding year, indications are that consumption of actual plant food (nitrogen, phosphate and potash) continued to increase.

In making this study the Institute obtained, wherever possible, consumption figures for both fertilizer and contained plant food. However, the latter were not available on a calendar year basis in a substantial number of States. Nevertheless, figures from States reporting both types of data indicated an increase in the average plant food content of fertilizer. In 1939 the average plant food content of a ton of fertilizer was 20.3 percent. Today it averages almost 28 percent. This means that about 5,700,000 tons of actual plant food were applied to the Nation's soils in 1955.

(Continued on page 69)

FERTILIZER CONSUMPTION IN THE UNITED STATES[1]

STATE	TOTAL CONSUMPTION (Short Tons) 1945	1951	1952	1953	1954	1955[2]
NEW ENGLAND	500,190	459,007	474,788	469,183	423,408	432,278
Maine	234,581	173,219	216,917	211,287	178,751	180,161[3]
New Hampshire	22,327	23,280	16,589	20,291	16,274	18,332
Vermont	45,340	66,164	46,186	50,582	40,368	46,816[3]
Massachusetts	89,257	86,620	95,448	85,454	85,917	84,516
Rhode Island	16,980	17,419	16,309	14,299	14,132	15,246
Connecticut	91,705	93,305	83,339	87,240	87,966	87,207[3]
MIDDLE ATLANTIC	1,242,521	1,486,299	1,514,182	1,497,597	1,549,930R	1,575,320
New York	531,929	625,000	631,250	640,000	588,800	617,699[3]
New Jersey	245,173	246,710	270,505	252,904	285,660R	281,030
Pennsylvania	465,419	614,589	612,427	604,693	675,470R	676,591[3]
EAST NORTH CENTRAL	2,081,813	3,388,970	3,914,399	4,140,033	4,083,864R	4,056,342
Ohio	635,325	930,463	1,113,968	1,107,895	1,008,400	1,088,467
Indiana	567,936	891,635	1,049,415	1,106,722	1,161,909	1,099,942
Illinois	270,243	646,668	792,162	919,638	897,322	801,074
Michigan	340,066	540,901	601,205	598,532	593,965R	651,319
Wisconsin	268,243	379,303	357,649	407,246	422,268	415,540
WEST NORTH CENTRAL	490,584	1,330,295	1,570,818	1,821,747	2,070,373	1,950,262
Minnesota	107,363	200,936	212,701	279,229	313,238	369,145
Iowa	145,033	396,263	402,613	579,327	609,868	546,594
Missouri	193,253	465,319	570,886	562,928	649,750	559,262
North Dakota	3,300	20,880	34,128	41,158	48,643	58,693
South Dakota	325	7,651	11,201	19,908	31,381	35,314
Nebraska	3,125	77,595	100,848	144,521	191,432	171,924
Kansas	38,185	161,651	238,441	194,676	226,041	209,330
SOUTH ATLANTIC	5,365,945	6,438,237	6,838,414	6,709,887	6,598,710R	6,743,630
Delaware	49,000	69,797	81,259	85,000	94,536R	94,084
Maryland	216,288	272,292	266,687	295,104	309,639	308,549
D. C.	1,500	2,000	2,400	2,500	2,700	2,800[3]
Virginia	628,468	807,359	845,721	799,548	776,786	798,227
West Virginia	59,527	103,027	96,334	84,168	73,816	87,381
North Carolina	1,530,276	1,766,479	1,872,685	1,820,622	1,824,352	1,791,258
South Carolina	823,078	938,936	971,565	956,231	886,654	911,576
Georgia	1,138,492	1,273,136	1,393,985	1,386,162	1,372,284	1,299,654
Florida	917,316	1,305,211	1,287,778	1,280,532	1,257,943	1,450,101
SOUTH CENTRAL	2,813,568	4,465,111	4,483,104	4,207,001	4,486,157	4,006,214
Kentucky	404,684	559,274	599,643	549,692	574,197	505,302
Tennessee	374,961	608,969	595,078	563,334	580,206	496,971
Alabama	780,871	1,094,648	1,115,893	1,040,500	1,196,628	1,039,160
Mississippi	536,859	764,051	707,473	654,805	710,298	642,428
Arkansas	155,206	413,091	365,528	398,063	374,601	331,093
Louisiana	269,860	302,623	335,805	292,907	328,814	292,066
Oklahoma	30,872	152,279	181,901	146,093	131,390	133,517
Texas	260,255	568,176	581,783	561,607	590,023	565,677
WESTERN	707,082	1,258,188	1,280,817	1,385,363	1,466,584R	1,652,364
Montana	8,000	18,000	20,000	26,000	27,000	27,760[3]
Idaho	34,086	60,000	50,000	74,000	75,000	88,425
Wyoming	4,400	6,500	7,000	11,800	12,000	11,206[3]
Colorado	18,055	49,695	44,333	48,354	46,458	48,659[3]
New Mexico	8,048	20,015	22,722	24,829	22,475	27,368
Arizona	29,483	106,960	109,234	116,047	138,481	145,354
Utah	8,906	30,053	25,513	32,420	32,379	25,522
Nevada	750	2,691	2,874	3,813	2,971	2,457
Washington	62,449	86,147	91,488	122,101	159,941R	172,975
Oregon	45,234	100,350	119,695	122,999	131,309R	137,328
California	487,701	777,777	788,058	803,000	831,570	965,310
UNITED STATES	13,201,703	18,826,107	20,076,822	20,230,781	20,679,026R	20,416,410

[1] Includes TVA farm test demonstration program and ACP distribution.
[2] Preliminary—Subject to revision.
[3] Estimated; margin of error may be large.
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TVA Test-Demonstration Tour Draws Specialists From 16 States

About 55 agricultural specialists from 16 states and the USDA attended Tennessee Valley Authority's eighth annual Out-of-Valley States Test-Demonstration Conference and Tour the week of May 21-25. Extension and research hosts in the Valley states plus TVA officials swelled tour numbers to over 100.

Studied were a dozen farms; intensive farm development in a small watershed; several communities; a cooperative; a river harbor; a mountain experiment station; and an experimental fertilizer development center.

The tour began at Asheville, N. C., where state delegates scattered from Washington to Ohio and South Carolina to Utah reported state test-demonstration results and methods.

Dr. Leland G. Allbaugh, director of TVA's Agricultural Relations Division, keynoted the tour there:

"TVA has always emphasized the idea that people are more important than land or any other single resource. However, the need for people, land and other resources being brought into better balance has also been emphasized," Dr. Allbaugh added. "And people, this greatest resource, are simply the product of a creative partnership growing out of a well-nourished soil and a properly balanced environment.

"We have worked with the local people, local groups and local agencies for over 20 years. At the same time, we have tried to help them develop their own resources and

(Continued on page 71)

Top: Left to right are John Murdock, extension specialist, soils, University of Wisconsin; George Stanford, chief, Soils and Fertilizer Research Branch, TVA; M. D. Weldon, agronomist in soils, University of Nebraska; and Martin E. Weeks, assistant director, Division of Agricultural Relations, TVA. These four agronomists are inspecting a heavy stand of forage on the B. L. Boyd test-demonstration farm, Marion County, Tenn., during the Out-of-Valley States Test-Demonstration Conference and Tour.

Bottom: This photo shows the irrigation system in action on the B. L. Boyd test-demonstration farm, with part of the crowd of over 100 from 22 states and the USDA who made the tour. Purpose of the tour was to study test-demonstration activities, methods and procedures and to see the relationship of test-demonstration to other programs, such as community development and farm and home development.

1955 Fertilizer Consumption

(Continued from page 66)

The consumption pattern in the Middle West shows a 2.4 percent decrease with the major part of the decrease occurring in the drought area of the West North Central States.

The South Central region, suffering from poor weather conditions, showed a major decrease of 10.7 percent from 1954 figures.

The only significant increase was in the Western States where 1955 figures were up 12.7 percent over 1954. Smaller increases in 1955 over 1954 occurred in the New England, Middle Atlantic and South Atlantic areas.

Fertilizer consumption in six States continues to exceed one million tons and accounts for more than a third of the total U. S. consumption: North Carolina, traditionally the leader, 1,791,258 tons; Florida, 1,450,101 tons; Georgia, 1,299,654 tons; Indiana, 1,099,942 tons; Ohio, 1,088,467 tons; and Alabama, 1,039,160 tons.

Percentagewise, New Mexico showed the greatest 1955 gain over 1954, 21.8 percent.

In the 10-year period since 1946, fertilizer consumption in the United States increased more than 37 percent. The greatest increase occurred in the West North Central States, where 1955 consumption was more than 169 percent greater than in 1946. The only section where consumption has declined during this 10-year period is New England with a 23 percent decrease.

Figures used in this report are for the calendar year 1955 .The official U. S. Department of Agriculture fertilizer consumption reports are for fiscal years ending June 30.

This report also differs from the USDA report in that tonnages of certain materials are not included to the extent it has been possible to eliminate them from available information. Materials excluded are limestone, phosphate rock, colloidal phosphate, basic slag, secondary and trace elements, gypsum, sulfur, and other soil amendments.

	Percent of Total U.S. Consumption		
REGION	1946	1954	1955
New England	3.7	2.1	2.1
Mid. Atlantic	8.9	7.5	7.7
East N. Cent.	16.4	19.7	19.9
West N. Cent.	4.9	10.0	9.6
S. Atlantic	39.9	31.9	33.0
S. Central	20.2	21.7	19.6
Western	6.0	7.1	8.1

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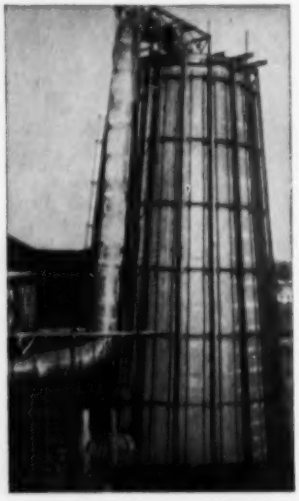

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TVA Tours

(Continued from page 68)

abilities—rather than do the job for them. Similarly, the agricultural development program has been carried out through the research and education program conducted by the land-grant colleges, with help by other agencies, farmer groups and fertilizer distributors," Dr. Allbaugh continued. He reminded that experimental, high-analysis fertilizers produced at the Fertilizer and Munitions Development Laboratory at Wilson Dam have been used as an educational and demonstrational tool to help farmers of the region improve their land and increase their incomes for better living. That part of the program extends over 35 states and has reached 60,000 farmers in 20 years, he said.

Dr. Allbaugh said that the out-of-Valley guests would later see how the combination of resource development programs had improved living through improved farms and farm homes, organized communities, new industries, and better watershed control. And fertilizer use is only one segment of the larger, over-all regional resource development program, he added.

In North Carolina, Georgia, Tennessee and Alabama where the tour was conducted, communities which placed high in contests and well diversified types of agriculture on test-demonstration farms were studied. Community development programs impressed the visitors in particular.

At Winchester, Tenn., Mr. E. C. McReynolds, associate director of the University of Tennessee Agricultural Extension Service, had this to say:

"You are seeing here the basic job of land building and protection fitted together with all other facets of agricultural development. More than this, you are also seeing this procedure fitted into a total regional development approach, drawing in the contribution of different organizations, institutions and agencies, and rural and urban people alike to achieve the common objective of total progress."

He added that when the new TVA experimental fertilizers appeared for testing, many states envisioned a whole-farm-and-family approach to extension teaching. The fertilizers made it possible to try this approach out on many farms, he pointed out. Not one or two farms per county, but scores were able to take part in this broader concept of farm and family progress. The idea spread to hundreds of organized communities in the Tennessee Valley. They demonstrated the results of organized effort to set the pattern into effect community-wide.

Next, increased buying power of the farmers was evident to urban groups. They soon joined forces to help accelerate this rural movement, McReynolds added. "Through this whole-farm-and-family approach, we have come to see that the job on the farm is that of directing the various raw materials of agriculture into a richer pattern," he stated. "Fertilizer is just one of these materials, but it is the one which most often limits the vitality and size of the life stream which involves soils, crops, livestock, climate, market, labor, capital, and the life of the farm family itself."

Also at Winchester, Dr. Shelden L. Clement outlined TVA's distributor demonstration fertilizer. As chief of the Fertilizer Distribution Branch, he heads up that program.

"This unique program ties together the fertilizer product and the improved practices in the fertilizer mixing plant, the distribution system, and the farm in a mass-education program in fertilizer processing and use," Dr. Clement explained.

"Aims of the program are four—to introduce new and improved TVA fertilizers; to promote improved fertilization practices; to lower the cost of plant nutrients to farmers through such means as higher analysis mixed fertilizers; and to encourage improvements in product, process and distribution systems.

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"Today many farmers in some areas still use low-analysis fertilizers even though improved fertilizers that cost less per pound of plant nutrients are available," Dr. Clement added. "Commercial fertilizer distributors, landgrant college crops and soils experts and TVA cooperate in trying to get the newer, more potent fertilizers introduced."

In this program, TVA fertilizers are used mostly on the soil-holding, close-growing crops such as winter grazing crops, small grain, hay crops and on other similar crops. In contrast, it is estimated that about 75 percent of commercial fertilizers are applied to high value crops, such as corn, cotton, tobacco, etc.

Dr. Clement cited how a concerted fertilization program conducted by selected fertilizer distributors and the state extension service enabled South Carolina to divert 750,000 acres from corn and cotton and put about 1,000,000 acres in pasture inside five years.

To shift toward more efficient fertilizer use, cooperating distributors hold educational meetings for dealers and farmers, pass out printed fertilizer materials, help farmers test their soil, and conduct other similar activities.

Dr. Clement told about how farmers in many areas can save by buying fertilizers of higher analyses. "Minnesota farmers—far from phosphate and potash mines—saved about $750,000 during the period from 1949 to 1954 by buying 4-16-16 and 5-20-20 instead of 3-12-12, and handled less material. Tennessee farmers saved nearly $1 million during 1954 in much the same way. And during 1955 a Kentucky farmer could get 25 to 30 percent more for his fertilizer dollar by buying 0-30-30 instead of buying 0-20-20 and 0-14-14," Clement emphasized.

Farms visited represented typical dairy, beef cattle, broiler and general livestock test-demonstration farms. Visitors saw at first-hand the problems confronting a typical Negro test-demonstration farmer. The tour ended at Wilson Dam. There the visitors toured the fertilizer and munitions development center, where experimental fertilizers are made. Proof that the combination of experimental high-analysis fertilizers and extension coaching pays test-demonstration farmers: More fertile farm land; fewer acres in row crops, more in pasture; gradually increasing farm inventories; new farm machinery and painted buildings; nearly always rising net farm incomes — one doubling between 1954 and 1955 on a farm included on the 1956 tour.

National Potash Offers Booklet on New Project

National Potash Company has prepared a booklet describing its new project to produce potash near Carlsbad, New Mexico.

Titled "A Basic New Source of a Basic Plant Food," the brochure reports that the company is spending $19,000,000 for the mine and related facilities which will have an annual capacity of 400,000 tons of high grade muriate of potash. Production is scheduled to begin January, 1957.

Storage and shipping facilities are designed to meet efficiently the rush of the annual peak fertilizer demand period, and provisions are being made for quick loading of the bulk or bagged product into covered hopper cars or standard box cars.

In addition to "guaranteeing quality and service," the company offers the help of a free technical service to assist fertilizer manufacturers in the problems of granulation in other production difficulties.

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WANTED: Manager for large fertilizer plant—North Midwest Area—Granulation experience preferred. Give age, education, experience first letter. Box #33, c/o Commercial Fertilizer, 75-3rd St., N. W., Atlanta, Ga.

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HELP WANTED: Specialty Plant Food—Wanted experienced man to develop and supervise sales of quality fertilizer for lawns, gardens, golf courses, etc. In reply state age, experience and salary required. Box #34, c/o Commercial Fertilizer, 75-3rd St., N. W., Atlanta, Ga.

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